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BIOGRAPHICAL MEMOIRS

OF THE MOST CELEBRATED

PHYSICIANS, SURGEONS,

ETC. ETC.

WHO HAVE CONTRIBUTED TO

THE ADVANCEMENT OF MEDICAL SCIENCE.

BY

THOMAS JOSEPH PETTIGREW, F.R.S., F.A.S., F.L.S.

Member of the Royal College of Surgeons; Surgeon to the Asylum for Female Orphans; Late Senior Surgeon of the Charing Cross Hospital, and Lecturer on Anatomy, Physiology, and Pathology; and on the Principles and Practice of Surgery; Doctor of Philosophy of the University of Göttingen; Member of the Royal Asiatic, Entomological, Numismatic, and other Societies; Corresponding Member of the Academy of Arts, Sciences, and Belles Lettres, of Dijon; Société Academique de Médecine of Marseilles; &c. &c.

vol 2

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JAMES ANNESLEY,

LATE SURGEON TO THE MADRAS GENERAL HOSPITAL.

&c. &c. &c.

"It may be said of our profession, that, unlike most others, it has for its constant and sole object to confer benefit on others. The advocate, at one time, pleads for the guilty; and, at another, endeavours to convict the innocent. The soldier engages to go wherever he is sent, that he may destroy the lives of those from whom he never received an injury: but the physician and surgeon are engaged only in lessening the afflictions, and prolonging the existence, of their fellow-creatures."

BRODIE.

THE power possessed by man, in resisting extraordinary degrees of temperature, has always excited the astonishment of physiologists, and remains still unsatisfactorily accounted for. But, although this power may be exercised for a limited period of time without serious inconvenience to the frame, we are but too well aware of the slow and certain effects of a continued residence in hot climates. The diseases peculiar to these have been, until late years, but little studied; and the modes of treatment irregularly proposed. As more correct views of the physiology of man have been cultivated, medical practitioners have been enabled to direct their inquiries to greater advantage: hence the numerous works which have recently issued from the press upon bilious disorders, &c., the almost invariable attendants upon those whose destiny it has been to endure the effects of a tropical sun. It would not, perhaps, be possible to name any individual whose labours have more eminently contributed to promote this branch of medical inquiry, than the respected subject of the present Memoir. His researches upon a most extended scale have been conducted with an acuteness of observation, and a philosophical precision, which equally reflect upon him the highest honour; and the large work by which his name will descend to posterity, has received

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the due and unqualified approbation of the Board which regulates the affairs of the Hon. East India Company. This work, to which I shall presently direct the attention of the reader, was published at the expense of the Company, an honour to which its merits justly entitled it; the cost would have been too great for the purse of any private individual.

JAMES ANNESLEY is descended from a noble family, and is the son of the Hon. Marcus Annesley, and born in the County Down, about the year 1780. His professional education has been derived from the schools of Dublin and London. In the former, he attended the lectures of Cleghorn, Boyton, Dickson, and Harvey, at Trinity College; and those of Hartigan, Lawless, Archer, and Wade, at the Royal College of Surgeons; in the latter, he received instruction from Baillie, Cruikshank, and Thynne. Through the interest of Sir Walter Farquhar, baronet, he received an appointment to India; and he consequently quitted England, and arrived at Madras, in December, 1800. Upon his arrival he was appointed to a corps at Trichinopoly, and joined the regiment in January, 1801; and, in the following month, was detached to join the field force in Southern India, under Major Macaulay, and was present during the whole of that campaign from March, at Panjalam Courchy, till November, 1801, at Kalicoile. The service was desperate, and afforded ample exercise for all the energies of the medical department. Mr. Annesley took his place with others of the profession; but many instances of remarkable personal exertion on his part might here be introduced. He served with a battalion of native Infantry, at various stations to the Southward, and in Wynaud Country, and Travancore, from 1802 to 1805, when he was obliged to return to England on sick certificate. He was absent two years, returning to India, in 1807, when he was appointed Garrison Surgeon of Masulipatam. Here his opportunities of studying the diseases of India were great, amongst Europeans and Natives; and he availed himself of those opportunities, by devoting his whole mind and attention to the causes and treatment of intertropical diseases. It may be remarked as an instance of extraordinary zeal in his profession, that, from that period to the present time, he has never treated a case, either in public hospitals or in private practice, without recording minutely the symptoms of the disease, the remedies employed, and the results of the application. His attention has always been particularly directed to the effects and the operation of medicines, with reference to particular symptoms; and, in the event of casualties, the *post mortem* appearances have been looked to, with reference both to the symptoms of disease, and the remedies used. A continued and zealous attention to these subjects enabled him, on most occasions, to state, with tolerable correctness, the appearances that might be

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expected upon necroscopic examinations. By this arduous course of observation, Mr. Annesley gained a confidence in practice, and a boldness in prescribing in difficult cases, which could not have been obtained in any other way; and I particularly mention this, because it formed the basis upon which his system of investigating disease was conducted, and which he has continued, uninterruptedly, during a most extensive and varied field of observation for many years.

In 1811, Mr. Annesley was appointed on the Medical Staff, upon the expedition to Java, and was placed in medical charge of His Majesty's 78th regiment, whose surgeon had died a few days before the fleet sailed from Madras, which was in the month of April. They were about 1100 strong, and, of this number, Mr. A. had the satisfaction of seeing 1070 men, fit for duty, land on the beach of Java on the 4th of August. Mr. A. did duty with the regiment during the whole service, until the fall of the entrenched camp of Cornalis. The field hospital, at this time, was in great confusion, and much distress prevailed. Mr. A. was, in consequence, removed from the regiment, and placed in charge of the establishment. It was no little compliment to the abilities of Mr. Annesley that he, being the junior on the medical staff, should have been nominated to the charge of the hospital; nor is it necessary here to dwell upon the causes which led to this appointment; but it is well known to those who were present on the occasion, that the greatest distress prevailed among the wounded, both as regards medical and surgical treatment, victualling and clothing the sick, and supplying them with proper attendance. Mr. A. was, however, called from the 78th regiment for the purpose of setting all matters into proper order; and, in *ten days*, he had the hospital, with about 1,400 or 1,500 patients all in regular order, properly clothed, victualled and treated. Mr. A. returned to Madras in December, after giving charge of the hospital to the person he had succeeded; and was nominated, on his arrival at Madras, to superintend a field hospital established by government for the native troops, who had lost their health in the expedition to the Isle of France and Java. The object of this establishment was to give confidence to the native troops of all kinds. Government was desirous to do all in its power to reward them for their zeal in volunteering for foreign service, by restoring them, as far as was practicable, to health, after their privations and hardships; and Mr. A. was selected for this duty, and to give full effect to the wishes of the government as a great public measure. The result of this is fully stated in letters from the Commander-in-Chief, General Hare, commanding the centre division, and the Medical Board; and there can be no doubt that this measure of government has been attended with the best consequences, as

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the Madras Sepoys will now volunteer for any service in any part of the world.

The Adjutant-General, by command of His Excellency the Commander-in-Chief, addressed the Chief Secretary to the government, to express his opinion of the "ability, exertion, and humane attention, displayed by Surgeon Annesley, equally honourable to his professional talents and public zeal, which His Excellency trusts will entitle him to the good opinion and favourable notice of government." The following extract from General Hare's address to the Adjutant-General may be interesting to the reader :—

"I lost no time, after returning to the head-quarters of the division, in proceeding to Arnee, for the purpose of inspecting and examining into the state of the Convalescent Hospital, established there under the direction of Surgeon Annesley, being well convinced that His Excellency, the Commander-in-Chief, attached all due degree of importance to the efficiency of the establishment; the manner in which his intention, and those of the government had been fulfilled, and the effect it had produced, not merely upon the constitutions of the patients who had been admitted, but upon their feelings, as to the humanity and liberality of the government; I have, therefore, most real cause for satisfaction, in being able to represent, in the most decided manner, my opinion, that every good has been obtained that could have been expected from the establishment. The best proof that can be adduced in support of this, is the enclosed return, by which it appears that, with the exception of a number of patients, and that incredibly small, in the short space of seven months, a general and almost total convalescence has taken place of a general and almost universal appearance of debility and disease. It will be a real source of gratification to His Excellency to reflect, that this humane and liberal establishment, which was formed without reference to expense, or other views, than the real comfort and welfare of the Sepoy, will eventually prove a saving to the government, inasmuch as I believe it is unquestionable, that the far greater part of those men received into the hospital, and who would have been either invalided at the time, or have remained a burden to their corps and themselves, without any prospect of ever becoming efficient for service, will be returned in health to their battalion.

I conceive it falls more peculiarly within the limits of the Medical Department, and of the Committee which has recently sat at Arnee, to bring to the Commander-in-Chief's notice, the professional exertions and attentions of Surgeon Annesley, in his care and superintendence of the hospital; but it is not irrelevant to my situation, to express my entire conviction of the merits and integrity of this valuable officer; and to request you will bring his name, when occasion presents itself, to the consideration of His Excellency, with my strong recommendation."

The Report of the Medical Committee is still stronger, if possible, as a testimony to Mr. Annesley's ability, and of more value, as it comes from professional men capable of rightly estimating his services :—

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REPORT OF THE MEDICAL COMMITTEE ASSEMBLED AT ARNEE, JULY, 1812.

"The instructions of the Commander-in-Chief, requiring a particular Report from the Committee, whether they consider that the object of Government and the Commander-in-Chief, in the institution of this Hospital, has been attained, and also their opinion on the manner in which the duties of the Hospital have been conducted by the Medical Officer in charge of it: agreeable to these instructions, we have examined with particular attention into every part of the management and economy of the Hospital. The cases of all the patients are regularly entered in journals, and the treatment of each minutely stated throughout. A great proportion of their complaints having originated in a depraved state of the digestive organs, in consequence of the privations and great change of accustomed habits experienced by the men on the service they have lately been employed on, we consider the plan of treatment for those patients, adopted by Mr. Annesley, to have been extremely judicious and singularly successful.

"To the comforts of the men, in supplying them liberally with every article of nourishment and restoratives suited to their respective cases—to the clothing, bedding, and general cleanliness, and methodical arrangement of the Hospital—a regular and unremitting attention has been paid; and of these advantages the patients seem to be very sensible. If we advert to the numbers returned fit for the effective list, who have recovered from a state of disease and debility, and observe that a majority of those remaining are placed on the non-effective establishment, in consequence of length of service, and circumstances unconnected with their recent complaints, together with the very few casualties that have occurred; we are, on these grounds, decidedly of opinion, that the benevolent and liberal intentions of the Government and Commander-in-Chief, in the establishment of this hospital, have been amply fulfilled; and that Mr. Annesley, the medical officer, placed in charge, has conducted its duties in the most exemplary manner, highly beneficial to the public service, and greatly to his own credit.

In 1812, Mr. Annesley joined the Madras European Regiment, where he had a very extensive field of practice, which he followed up under the system already mentioned, till 1815, when he was ordered upon field service, under the personal command of Sir Thomas Hislop. That service did not last long, and he again joined his regiment at Trichinopoly, in 1816, and remained with it at that place, Kurnoul, on the Tamboodra River, and Hydrabad, till 1817, when the last Mahratta and Pindaree war commenced, and the Deckan army was formed, under the command of the Commander-in-Chief. Mr. Annesley was then appointed Superintending Surgeon to the advanced divisions of the army, with which he served in the field, on actual service, until the end of 1818. During this service, his Excellency the Commander-in-Chief bore frequent testimony to the value of Mr. A.'s services, and the admirable condition of the medical staff under his superintendence. Various general orders speak in the highest terms of his ability

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and zeal. It would be injustice to Mr. A. to omit the following, from among many other documents that have fallen under my notice :—

" His excellency Lieutenant-general Sir Thomas Hislop, Bart., Commander-in-chief of the Madras Army, to the Right Honourable Hugh Elliot, Governor of Fort St. George.

Madras, July 1, 1818.

RIGHT HONOURABLE SIR,

AT the conclusion of a campaign, as arduous as any which stands recorded in the annals of the British Empire in India, and in which the Army of Fort St. George has so nobly maintained the lustre of their former brilliant achievements, you will not, I am confident, deem it presuming in me, when at any time I endeavour to bring to public notice the meritorious services of any individual who served during the before-mentioned period, under my command, and to whose deserts I can myself bear testimony.

Many, indeed, are there who have just claim on that tribute from me, and to whose talents and zeal I must ever feel myself very largely indebted for the successes which crowned the uniform indefatigability, high discipline, and bravery of the army of the Deckan; but not one is there,—and with peculiar gratification do I assert it,—stands higher for professional abilities, unceasing laborious exertions in the discharge of them, accompanied with the most humane attentions to every one committed to his care, than Superintending Surgeon Annesley, who, throughout the campaign was immediately attached to my own person, together with the first and third divisions of the army under my command. Previous to the opening thereof, you, sir, are aware that I owe the preservation of my life to his skill and incessant watching of the dangerous illness with which I was attacked at Hydrabad; but it is to the more important public service which he rendered the state after the battle of Mahidpore, that I am desirous of directing attention; by which, out of our numerous wounded, so many gallant officers and soldiers were saved for the further service of their country and their government.

To the wisdom of his arrangements, to the personal example which he set to every one placed under his orders in the medical department, I feel myself, as I shall never cease to acknowledge, as the head of that army, eternally indebted to him; and I now feel that I am only performing the discharge of a public duty, in most respectfully and earnestly recommending him to the advantage of your patronage, as soon as an opportunity may put it in your power to advance his interest, by conferring on him an appointment suitable to the deserts I have herein endeavoured (but feebly) to set forth.

I have the honour to be, with great respect,

Sir,

Your most obedient humble servant,

T. HISLOP.—*Lieutenant-general.*

Upon his return to Madras, he was appointed garrison-surgeon of Fort St. George, and to the charge of the General Hospital at that presidency.

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He was at the head of this large establishment, with never less than from 170 to 200 persons under medical treatment: Europeans and natives, women and children, where he had most extensive opportunities of investigating disease of all kinds, and under all circumstances—acute and chronic, among every class of the community, recent arrivals in India, and long residenters. This situation enabled him to establish, or correct, opinions he had formed in his extensive regimental career; and he did not allow the opportunity to pass unheeded, as the works presently to be noticed will most amply prove.

In the performance of his duties, he remained at Madras until 1824, when the state of his health compelled him to come to England upon furlough, and he returned to India in 1829. Prior, however, to his departure from India, he had an opportunity of rendering some very efficient professional services to the officers and seamen on board his Majesty's ships at Madras; the value of which may be estimated by the following letter:—

Admiralty Office, 20th February, 1823.

SIR,

MY Lords Commissioners of the Admiralty having had under their consideration a letter from the Honourable Rear-Admiral Sir Henry Blackwood, respecting the essential and humane medical aid which you afforded to various officers, petty officers, and seamen, belonging to such of his Majesty's ships as went to Madras during the period that he commanded the squadron in the East Indies; I am commanded by their lordships to acquaint you that they have in consequence directed me to present to you, in their name, a piece of Plate of the value of one hundred guineas, as a mark of the sense entertained by their lordships of your services to the Navy.

I am,
Sir,
Your very humble servant,
J. W. CROKER.

J. Annesley, Esq. Military Hospital,
Fort St. George, Madras.

On the plate thus honourably voted is inscribed:—

"Presented by command of the Lords Commissioners of the Admiralty to DOCTOR JAMES ANNESLEY, Surgeon to the Garrison of Fort St. George, as a Mark of the sense their Lordships entertained of his Gratuitous Medical Attendance on the Officers and Men of His Majesty's Ships in Madras Roads, 1823."

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JAMES ANNESLEY.

In 1828, the medical board of Madras felt powerfully impressed as to the defective state of knowledge existing upon some of the diseases of India, and submitted to the governor in council as their opinion:

"That to improve and render the practice in those diseases of unequivocal utility, it is highly important that an extensive series of recorded results of the modes of treatment that have been employed for their relief should be laid before the profession, with a view to the establishment of general principles for directing the application of remedies, under various states and stages of disease, in which very opposite curative means are undoubtedly requisite, and in reference to which the practice in India is far from being at present generally conducted, with the deliberate reflection and discrimination that we consider essential to the safe and advantageous exercise of the medical profession."

To remedy these evils, Mr. Annesley, in 1829, was appointed to examine the Medical Reports of former years, with the view of selecting such cases as might tend to throw light upon the diseases of India; and to facilitate the performance of this duty he was appointed an acting member of the medical board. He was, however, also selected to report upon different matters relative to the climate, healthiness, and productions of the neighbouring hills, where he arrived in the month of April, immediately made a tour of the hills, examined localities, collected information from those who had experience of the salubrity of that climate, and consulted all that had been written upon it from their first discovery to the present period.

This labour was completed by September, when he arranged all his information, and reported to the governor in council upon the subject. He then turned his attention to the Medical Reports, made a digest of the records from the year 1786 to 1829, reduced an enormous bulk of materials, the accumulation of more than forty years, contained in upwards of two hundred large folio volumes, into twelve volumes of valuable information. Mr. A. was exceedingly anxious to examine the records of the medical board of Madras, with the view of tracing the progress of medical science; but as he was fearful of soliciting the necessary assistance for the full performance of this laborious duty, he himself undertook by his own personal exertions to accomplish this object, without any other incentives than those of promoting the good of the service and the advancement of medical science. He commenced his labours in February, 1830, and completed those grand objects of research, without involving the government in the expense of a single rupee. As a work of reference, Mr. A.'s digest is invaluable; it gives the results in practice obtained in an army of between

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80 and 90,000 men, Europeans and natives, spread over the greatest part of the Peninsula of India, from the Nurbuddah, North, to Cape Comorin, South; and from Goa, West, to Ganjam, East; including the whole intermediate country. To detail the particulars of the arrangement adopted by Mr. A. would occupy too much space in this Memoir; but it may be described generally as giving, in three parts, a regular series of reports, topographical and medical, from 1786 to 1816, and recording in the most faithful manner the original opinions, and the results of the medical treatment employed by each individual medical officer.

Of the advantages resulting from these labours, it may be affirmed that such has been the improvement in medical practice, and the necessary regulations emanating from the medical department, that an extraordinary diminution of mortality has ensued; and this has been regularly progressive; as we find, in a tabular view given of the condition of the Madras army, European and native, from 1829 to 1835, compared with the preceding years, from 1822 to 1828, there has been in the European army a reduction of mortality of $3\frac{1}{2}$ *per cent. per annum*, and of sick treated in hospital of $11\frac{1}{2}$ *per cent. per annum*, with a correspondent reduction in the native army; a result most satisfactory, and from which it may be inferred that the medical officers of this establishment have practically advanced in medical science, and have arrived at a more successful mode of treating Indian diseases than their predecessors. That these happy consequences have resulted chiefly from the labours and enlightened views of Mr. A. will not admit of a doubt, and reflection upon this subject must be to him a constant source of the highest gratification. In forwarding to England the twelve volumes of Digest, accompanied by four volumes of Medical Observations and Cases, the following minute was transmitted:

"The Right Honourable the Governor in Council observes, that Mr. Annesley's labours are not only honourable to himself, but that they reflect the highest credit on the branch of the service, at the head of which he stands. The result of his inquiries cannot fail to be highly satisfactory to all who are interested in the health and welfare of the Madras army, indeed of the community at large. His Lordship in Council directs that Mr. Annesley's digest of the Medical Records of this Presidency be transmitted, by the earliest opportunity, to England; and that his extraordinary industry and zeal, in collecting, by his own exertions, and at his own cost, so valuable a body of information, be brought to the especial notice of the honourable the Court of Directors, with the earnest recommendation of this Government that the Honourable Court may take into their consideration the propriety of conferring on Mr. Annesley some mark of their appreciation of his labours and distinguished services."

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The Court of Directors awarded to Mr. A. the sum of 5000 rupees. In 1838, Mr. Annesley then being the first member of the Medical Board, and having completed a service of five years on that board, was permitted to retire from the Honourable Company's Service on the pension of his rank. The Governor bore, on this occasion also, his testimony to Mr. A.'s "professional abilities, unwearied assiduity, and zealous discharge of his duties," and submitted his claims to the favourable notice of the Honourable Court of Directors. Public servants are but too often ill-requited for the performance of the most laborious duties, though attended with the happiest and most advantageous results. Mr. Annesley has completed a service of 37 years in India, and enjoys no advantages beyond the ordinary allowances, save the reflection which must ever animate his bosom, in the consciousness of having most meritoriously exerted himself, in the advancement of medical science, and for the relief of his fellow-creatures. In the performance of his duties he has been exposed to many trying changes of climate, and to excessive fatigue and hardship, by which his health suffered so severely, that when he arrived at Bangalore in 1829, on his way to Madras, his life was despaired of; and this illness, in addition to his subsequent laborious duties, as an acting member of the Medical Board, laid the foundation of that state of health which obliged him, in 1832, to go to sea on sick certificate—a measure of absolute necessity, but attended with very considerable pecuniary loss.

In this respect, however, Mr. Annesley may console himself in the opinion, so well expressed by Polybius, that money indeed can be possessed by any sort of man whatever; but the virtuous and honourable, and that which leads to praise and glory, is peculiarly the property of the gods, and of men who come nearest to them.

"Τὸ μὲν αργύριον ἐ ϛι κοινὸν τι ὠάντων ἀνθρώπων κτημα· Τὸ δὲ καλὸν, κὶς ὥρος ἔπαινον κὶς τιμὴν ἀνῆκον θεῶν κὶς τῶν ἔτγιϛα τουτους πεφυκότῶν ἀνδρῶν ἐϛι."

I must now direct the reader's attention to Mr. Annesley's works:—

In 1825 Mr. Annesley published *Sketches on the most Prevalent Diseases of India*, and this work, in 1828, reached a second edition. It comprises *A Treatise on the Epidemic Cholera of the East; Statistical and Topographical Reports of the Diseases in the different Divisions of the Army under the Madras Presidency; the Annual Rate of Mortality, &c., of the European Troops, and Practical Observations on the Effects of Calomel on the Alimentary Canal, and on the Diseases most Prevalent in India.*

Of the real nature of the Epidemic Indian Cholera, Mr. Annesley candidly admits our ignorance, as also of an uniform successful mode of combatting the disease. With this conviction upon his mind, he sets himself

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zealously to contribute, from an extensive experience, to the hitherto small stock of knowledge we possess upon the subject, and thus to assist in accumulating data from which a reasonable mode of treatment may be adopted. Having had the medical charge of the Garrison of Fort St. George, and of the General Hospital of the Madras Presidency, from 1819 to 1823, during which time the epidemic cholera raged with great fury, Mr. Annesley had abundant opportunities of observing the disease in all its stages, and under all its varieties, of treating it in various ways, and making *post-mortem* examinations of those who had fallen victims to the pestilence. All the statements put forth by Mr. Annesley on this subject, are evidently selected with the greatest candour, and are the results of bed-side practice. In the treatment of the *first* part of his work, that which relates to the Epidemic Cholera of India, he sets out with proposing two questions for consideration:—

"1st. Is there any mention made in the Hindoo medical writings, or in the history of the countries which have been visited by the present destructive disease, of its prevalence in any former age in a similar form?

"2. Does the history of medical science furnish any account of the occurrence of cholera, as an epidemic disease, either in India or in any other part of the globe?"

From all enquiries bearing upon the first point, Mr. Annesley says he could not obtain any information that cholera had prevailed in former ages as a wide-spreading epidemic; but in its sporadic and less malignant form, he thinks it is mentioned in the medical writings of the Hindoos, though in such a manner as to leave doubts upon the subject, and certainly not to afford any illustration either of its pathology or treatment. The information upon the second point is almost equally unsatisfactory. Mr. A. dwells upon the sporadic form of cholera being a disease dependent upon the climate of India; and he justly insists upon this fact not being lost sight of in all our speculations as to the origin of the disease. He says it depends as much upon particular climates, upon the nature of particular localities, and upon certain states and changes of the atmosphere, as dysentery, bilious fever, or hepatitis. It is consequently found endemic in some districts, particularly at certain seasons of the year, and owing to a combination of the particular atmospherical vicissitudes which are well known to give rise to the disease; with those causes which belong more immediately to the district or locality, he tells us, that it may assume many of the characters of an epidemic malady; but then, although assuming these characters, it will be found that it entirely depends upon the causes alluded to; namely, those which relate to the district in which it occurs, and the state of the atmosphere observed

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for some time previous to and during its occurrence; and that it will disappear with the disappearance of these causes, especially of the latter.

The epidemic India Cholera is not to be confounded with the Cholera Morbus, well described by many writers. It has not been a partial epidemic, but has been general throughout the greater part of Asia, without having relation to localities or the atmospherical changes on which sporadic cholera is generally found to supervene, and sometimes to prevail to a very considerable degree.

In the narrative of the symptoms of the disease, Mr. Annesley dwells upon several subordinate features in which it is found to differ from other epidemics; and he especially marks the extraordinary rapidity of its course, defying all attempts made to arrest its progress. Numerous as have been the works written upon the Cholera before, during, and subsequent to its visit to these shores, works proceeding from the best observers and most qualified practitioners, in none of them, it is but just to state, are the symptoms of the disease detailed with greater accuracy than in this work. Mr. A. has powerfully delineated the symptoms which denote the invasion of an attack of epidemic cholera—these are familiar to those experienced and attentive practitioners who have enjoyed large opportunities of observation in India; and as a knowledge of these may serve to check the degree of severity the disease would, in its ordinary course, assume, those points are of the greatest importance.

"A practitioner possessed of true professional tact, will discover, in the countenance of the patient, the earliest changes which mark the approaching invasion of cholera. The countenance is expressive of something approaching a state of anxiety, although the patient himself may not be aware of his state, or even that he is at all ailing. If the medical attendant inquire how he feels at this time, he generally answers, "Very well:" but if pressed upon the subject, he acknowledges that he experiences feelings which he cannot distinctly describe, though he feels neither pain nor sickness. His spirits are, however, low, and there is a clammy moisture sometimes on the skin, and the pulse, though occasionally full and strong, is evidently oppressed and labouring. It is not, however, that kind of pulse which would attract particular attention, unless we are upon the alert for this disease; but being prepared for such a visitation, it is impossible to mistake it; and bleeding at this moment may be, and indeed has been found to be, attended with the happiest consequences."

I have purposely quoted this passage, because Mr. Scott, the secretary to the medical board of Madras, states the disease to be unattended by any premonitory symptoms, that can be regarded as being at all peculiar to it. Indeed, he says, that the disease

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"is of sudden invasion; for, although a slight nausea, a laxity of the bowels, and a general feeling of indisposition, are often found to precede cholera, yet these symptoms are evidently common to many acute diseases; and they are especially frequent in this climate, without being followed by any grave ailment. When such symptoms are found to precede cholera, they might with more truth be regarded as indicating merely a certain deranged state of the alimentary organs; a condition of the body which certainly predisposes a person to an attack of cholera."

Mr. Annesley, on the contrary, adduces evidence to prove that there are premonitory symptoms, and those too of a pathognomonic kind. The "sudden invasion, with slight nausea and laxity of the bowels," he looks upon as the approach of the disorder to the second stage; the transition of the symptoms of invasion into those of the perfectly-formed disease, when it is approaching its height, and when the patients are more generally brought to receive medical aid. When the premonitory or invading symptoms are not understood, and particularly when they are not looked after, the medical attendant must be quite unprepared to check the disease in its early progress, at which time it unquestionably is most manageable.

The symptoms by which Mr. Annesley thinks this disease is always marked, is "a burning sensation between the scrobiculus cordis and the umbilicus, precisely over that spot where the vermilion blush is invariably found on examination after death." This vermilion blush over the small intestines—a blush exactly resembling the colour which they assume when injected to show the villi—he conceives to be peculiar to this disease, and belonging to its pathological character, because it is the only appearance that is not observable in many other diseases.

Mr. Annesley gives an account of several cases, and of the dissections in those which proved fatal. The appearances upon dissection were found to be precisely the same in the natives of India as in Europeans. In the former cases, however, the disease terminated most rapidly. He regards the epidemic cholera as essentially an affection of the nervous system, and considers the diminution of the nervous power to be the proximate effect of the efficient cause of the disease—that cause being the electrical condition of the air, arising from, or accompanied by, terrestrial exhalations of a kind unfavourable to animal life. The peculiar change in the character of the blood, rendering it unfit for the purposes of life, he derives as a consequence of the depression of the nervous influence.

In the treatment of the disease Mr. A. directs his attention to the removal of the extraordinary state of venous congestion universally prevalent in the system; and he endeavours to restore the balance of the circulation.

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Bleeding, to relieve the heart and lungs from oppression, is the first step in the cure of the disease; but it can only be resorted to in the earliest stage and before the circulation ceases at the wrist. In the use of this remedial measure, he is not guided by the quantity abstracted, but by the effect produced. It is allowed to be withdrawn until it assumes a bright red colour, before which he emphatically says, *the patient cannot be considered safe.* But, although he looks upon bleeding as "the sheet anchor in the treatment of this disease," he does not neglect other aids, particularly after the abstraction of blood has relieved the spasm, venous congestion, consequent oppression, &c. He employs camphor, ammonia, and æther, in preference to opium, from the employment of which he thinks he has seen mischief produced by a determination to the brain. He recommends rubefacients; but has not seen benefit from either the warm or vapour bath. Calomel in large (scruple) doses, combined with opium, always constitutes an essential in the treatment. The favourable change to be looked for is the production of a blackish-grey feculent and tenacious discharge from the bowels. When the patient shrinks from pressure upon the abdomen, great advantage is derived from the free application of leeches. Extreme watchfulness upon this point is requisite. In the dissections of fatal cases, the whole line of the small intestines was found to exhibit a remarkable appearance, from the duodenum to the cœcum —the bowel was contracted, thickened, and pulpy; within, it was filled with a cream-coloured, thick, viscid, and tenacious matter, exactly like old cream cheese, which glued the sides of the bowel together, and completely obstructed the passage. Now, to this peculiar and constant appearance, Mr. A. particularly directed his attention. Herein scruple doses of Calomel were found to constitute the most efficient means. The nature of the substance contained within the bowel was subjected to experiment, and the action of various purgatives upon it was ascertained.

"The secretion itself was concentrated, cream-coloured, or greyish yellow, like healthy pus. When mixed with alcohol, it formed a number of discrete coagula, minutely divided; colour unchanged or ochry.

"Ammonia, æther, and camphor, produced no alteration whatever upon it.

"Diluted nitric acid, precipitated it in small flocculi; tartaric acid in solution, and in considerable quantity, completely dissolved it, and rendered it perfectly fluid. Cystic bile dissolved it sensibly, the mixture being intermediate in colour between the two.

"Calomel mixed with it in small quantity, formed a dark greenish grey, precisely similar to the dark grey dejections already mentioned, and appeared to dissolve it. Calomel and cystic bile combined rendered it more fluid, and produced a dark green colour.

"These experiments were repeated as often as opportunities occurred, but without removing the secreted matter from the intestines, and the results were invariably the same.

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" The conclusions, therefore, which I draw from the foregoing facts, are—

" 1st. That tartaric acid is the most useful drink, from its dissolving the matter.

" 2nd. That calomel unites with and separates this viscid matter, and produces those black-grey dejections which precede recovery, and which are unaided by, and unmixed with, bile.

" That the green dejections which succeed to the former, arise from cystic bile and calomel, in combination with this matter.

These experiments have undoubtedly thrown a new light upon the treatment of cholera; and Mr. A., keeping the points to which I have directed the attention of the reader constantly in view, has been remarkably successful in cases of this most formidable disease. From the 23rd of May to the 23rd of August, 1819, he had 59 cases of epidemic cholera: 15 of those died, and they were cases in which 4, 5, or 6 hours had elapsed before medical aid was resorted to; the successful cases were treated at the outset of the disease, which fully shows now manageable it is if attacked at the commencement. Mr. A. gives many remarks in proof of the non-contagious nature of the disease.

In the *second* part of the work, Mr. Annesley has given *Topographical and Statistical Reports of the Diseases most prevalent in the different stations and divisions of the army under the Madras Presidency.* These reports show the prevalence of certain diseases at different periods of the year in each division of the army, the treatment required, and the mortality during certain periods. To these are added observations on the nature of the climate, and on the comparative effects of the disease upon the constitutions of the Europeans, and the natives of the same military class, subject to the same duties, and exposed to similar vicissitudes. To take the lead in an enquiry of this importance is a matter which deserves high praise—that is due to Mr. A. He has very properly directed attention to this subject, and urged the necessity of the attempt, upon a large scale, by those who have long had possession of the necessary documents. This appeal has not been made in vain, as I shall shortly have an opportunity of showing in another Memoir. The ever-active mind of Sir James M'Grigor, and his devotion to the service over which he presides, is now in the course of proof, by the publication of a series of the most important documents of this description that have ever been put forth. Medical officers, upon arriving in a country, to the climate of which they have been personally strangers, will henceforth be enabled to acquire that information upon which a knowledge of disease, and the necessary modes of treatment, must be founded. To Mr. A. great praise is due for his attempts to supply the deficiency of which he was early sensible.

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These reports will amply repay the medical inquirer for the trouble of a careful examination.

The *third* part of Mr. Annesley's book consists of *Practical Observations on the effects of Calomel on the mucous surface and secretions of the Alimentary Canal; and on the use of this Remedy in Disease, more particularly in the Diseases of India.* Mr. A. sets out with a proposition that will startle many practitioners in this country. He says "when the use of calomel is clearly indicated, it is most beneficial in large doses, generally at not less than 24 hours between the administration of each dose." He quotes, however, largely from ancient authors in confirmation of the propriety and efficacy of his practice; and enlists under his banners the names of Horstius, Sylvius, Wepfer, Freind, Schroder, Juncker and Geoffroy. Considering the length of time calomel has been employed, and the frequency with which it has been administered, it is not a little remarkable that no experiments should have been made to ascertain the direct effects produced by it upon the intestinal surfaces, and the secretions which emanate from them. Mr. A. has directed his views to this subject, and he has, by a series of well-contrived experiments and investigations, clearly shown that the effect of calomel, in large doses, is to diminish the vascularity of the stomach and alimentary canal. He gives drawings of the stomach of the dog, in its healthy condition, when the internal surface exhibits an uniform high red colour; and after a large dose of calomel had been given, when the intensity of the colour is much diminished. It shows the power of the medicine to abate vascular action, and to allay the irritability of the stomach and intestines. Mr. A. acknowledges his practice of administering scruple doses of calomel to have arisen from a perusal of the valuable work of Dr. James Johnson on tropical diseases; and he employed them with such manifest advantage in some cases of advanced dysentery, that he determined to try their efficacy in other acute diseases common in India, and accompanied with great excitement and irritability of the stomach. He has largely adopted this plan for a great number of years; and he assures me that his confidence in its propriety is not in the slightest degree abated. This is a subject of great importance in many points of view; and I will venture to hope that Mr. A. will yet give us some further information on the subject, as it is deserving of the strictest investigation and the most ample display. This division of Mr. A.'s work contains many observations which are well worthy the attention of the profession. They are too numerous to be extracted, and they will not conveniently admit of abridgment; I must therefore refer the reader to the work itself.

The account I have now given of Mr. Annesley's work will have prepared the reader to expect, in a larger publication, a more extended and comprehen-

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sive view of the diseases of warm climates generally. In these expectations he will not be disappointed. In 1828 Mr. A. published two large quarto volumes, consisting of upwards of 1400 pages: *Researches into the Causes, Nature, and Treatment of the more Prevalent Diseases of India, and of Warm Climates generally.* The work is illustrated by 40 coloured engravings, in which are represented all the various appearances offered in a morbid condition of the structure of the parts affected. Admirable as this work is, both in arrangement and execution, and enriched as it is by physiological inquiries of the deepest interest, and cases of the first practical importance, I cannot help expressing my regret that it should not have been condensed into a smaller compass. Its utility would thereby have been greatly increased, and an expenditure both of money and time averted. It is not necessary to give all the cases in detail; a daily report of them becomes irksome; and the profession would have been equally satisfied with a brief abstract of them, and the inferences drawn by the author. Any one who ventures to read but half-a-dozen pages of the work, will be convinced of the candour of the author, and of his fitness, from a most extended experience, to embody the facts which have been presented to his view, and to admit the justice of his deductions.

This work presents the results of the experience of 25 years' practice over almost every part of India, under all circumstances and situations of intertropical service, in regimental hospitals, moving over various countries and through different climates, amongst Europeans as well as natives, and among men, women, and children, in all classes of the community, public and private. Of the cases he has taken notes of the symptoms, progress, and treatment; and whenever fatal he has added the *post mortem* appearances, of which, from the most faithful drawings, the plates have been engraved.

To an observer in this country, the colouring of these appearances may seem almost too vivid; but in India, necroscopic examinations are necessarily made within a few hours of death; and thus the real condition of parts is more distinctly manifested. Mr. Annesley pledges himself for the fidelity of the drawings and the accuracy of the colouring.

Of this work it is impossible for me here to give any analysis: I can merely enumerate the subjects and arrangement of them; and to the work itself the reader must look for full information respecting them. After some preliminary observations, and preparatory to a consideration of the diseases, the author has a physiological chapter on the digestive and assimilating functions. He then takes a general view of the causes, chiefly productive of diseases in warm climates, particularly in India; traces those causes to soil, to situation, and vegetation; dwells especially on the soils and situations

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productive of miasmata, and the circumstances favouring their generation; considers the nature, properties, and effects of miasmata; their operations upon the human constitution, and the means of preventing the generation of malaria, and of counteracting its effects on the human body. The climates, and usual course of the seasons, in the different British possessions in India, are then specifically detailed, and abstracts of the medical returns are given. The premonitory symptoms of intertropical diseases, and the importance of attending to them, conclude the *first* book.

The *second* gives an account of the diseases of the stomach most prevalent in India, and warm climates; to which succeeds an account of the diseases of the Liver and Biliary apparatus, followed by those of the small and large Intestines, the Spleen and the Pancreas. Sub-sections give a variety of curious and valuable information on subjects connected with those conditions, such as elongation and unnatural position of the colon, observations on hypochondriasis, melancholia, and mental alienation, as connected with the accumulations of morbid matters in the bowels, the effects of the presence of worms, of hemeralopia, or night-blindness, &c.

One of the most important part of the work is that, in which, in the most ample manner, he treats of dysentery, its forms and consequences, its simple and its complicated existence, its causes, pathological appearances, and its treatment.

In the *third* book Mr. Annesley treats of the fevers of warm climates, remarks on their pathology, exciting and predisposing causes, types and forms, intermittent, remittent, and continued; and gives an elaborate account of the complications and terminations of these, with the appearances on the examination of the fatal cases. The various modes of treatment are described, and the most judicious means proposed. Nor does the author forget to point out the essential management of convalescence from fever and dysentery, and of change from a hot to a temperate climate, either during or after a recovery. He suggests also many sanatory rules for the management of European troops upon their arrival in India, and during their stay in the country, with the view of mitigating the prevalence of disease amongst them. This subject has, since Mr. A.'s work, attracted the attention of the Inspectors of Hospitals; and various arrangements have been made, which will be found conformable to his suggestions, particularly as regards diet, clothing, &c. Appendices, of considerable extent, give extracts from Official Reports made to the Army Medical Board, by various Medical Officers, for access to which the author is indebted to the zeal and liberality of Sir James M'Grigor.

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Charles Bell

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SIR CHARLES BELL, K.H., F.R.S. L. & E.

PROFESSOR OF SURGERY IN THE UNIVERSITY OF EDINBURGH,

&c. &c. &c.

——" Genus et proavos et quæ non fecimus ipsi
Vix ea nostra voco."

OVID.

" If a man perform that which hath not been attempted before, or attempted and given over, or hath been atchieved but not with so good circumstance, he shall purchase more honour than by affecting a matter of greater difficulty, or virtue, wherein he is but a follower."

BACON.

SIR CHARLES BELL was born in Edinburgh, in the year 1778. He is the youngest son of the Rev. William Bell, a clergyman of the Episcopal Church of Scotland;* and was educated at the High School of Edinburgh; a seminary, whence have issued some of the most eminent characters of our time. His attention was early turned to the study of Anatomy, for while a mere youth, he assisted his brother, Mr. John Bell, in his anatomical

* The eldest brother of Sir Charles Bell was the late Robert Bell, Esq. advocate, professor of conveyancing to the Society of Writers to the Signet in Edinburgh, and author of several publications, of good repute, connected with the law of Scotland. His second brother was the celebrated John Bell, surgeon in Edinburgh, under whom Sir Charles was educated; and his third and now only surviving brother is George Joseph Bell, Esq. professor of the law of Scotland in the University of Edinburgh, and successor of Sir Walter Scott, as one of the principal clerks of the Court of Session—a gentleman who, as a lawyer, has had the rare distinction of living to hear his works on law quoted, both from the bar and on the bench, as of the very first authority.

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lectures and demonstrations; and, even before he had become a fellow of the Royal College of Surgeons of Edinburgh, he had published the first part of his Plates of Dissections.

In the year 1799, Mr. Charles Bell was admitted a member of the Edinburgh College of Surgeons; and immediately afterwards as one of the surgeons of the Royal Infirmary (the only hospital then in Edinburgh) where he exhibited remarkable skill as an operator. In the operation of lithotomy, in particular, he used the knife instead of the gorget, and on the first occasion of his performing that operation in the theatre of the hospital, he succeeded in extracting the stone in two minutes and a half, to the astonishment of those who had been accustomed to witness the protracted suffering of the patient under the operation with the gorget.

The same professional intrepidity and dexterity, combined with great simplicity and originality, marked all his operations during his subsequent career; so as fully to justify the encomium of M. Roux, who in his work on the state of surgery in England, in reference to the similarity of Mr. Bell's mode of operating to that of the Parisian School, happily characterises him as operating "*Avec grâce sans affectation.*"

Towards the close of the last century, a very painful controversy arose among the members of the medical profession in Edinburgh. The subject of discussion was the proposed repeal of a regulation, under which all the fellows of the Royal College of Surgeons, in their turn, were privileged to operate in the Royal Infirmary. But this contest was unluckily imbittered by imputations on the purity of the motives of the senior members of the college, and by insinuations that they were actuated by an unworthy jealousy of their juniors; while the heats and resentments thus engendered were aggravated and perpetuated by the perverse and misdirected ingenuity of the leading disputants; so that the debate passed by a very rapid declension into a virulent and acrimonious personal altercation, in which two of the most eminent medical men at that time in Scotland, losing sight of the original subject of dispute, wasted their time and abused their talents in a reciprocation of sarcasm and invective, alike unworthy of one and of the other; and but slightly palliated by the wit and fancy so prodigally expended in the embellishment of their rival effusions.

The champion of the junior members of the college of surgeons was Mr. John Bell, while the leader of the adverse party was the no less celebrated Dr. Gregory: and although, looking back to those times, it is impossible not to lament that a subject of ephemeral interest and minor importance, should have alienated two such men; yet those who were then in the vortex, particularly if connected with either party, were not permitted to

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remain indifferent or passive spectators. Hence, it is by no means surprising, that Mr. Charles Bell, at that time ardent in the pursuit of higher objects, and harassed by the discordant jarrings of those around him, should have relinquished a field of professional enterprise where he must have felt it hopeless, by any merit on his part, however great, to counteract the prejudice, inseparable, in so contracted a society as that of Edinburgh, from the rancorous system of professional partizanship, in which his brother had taken so prominent a part.

It was under these circumstances, that in the year 1806 Mr. C. Bell left Edinburgh for the wider and more liberal field of exertion presented by the metropolis. Here he resolved to open his way to distinction, as a lecturer on anatomy and surgery. The task he had thus imposed on himself was an arduous one. The lecture rooms of London were at that time occupied by anatomists of the very highest repute; among whom were Cline, Cooper, and Abernethy. Yet, even in the encounter with such competitors, Mr. Bell had no reason to feel discouraged. His unwearied diligence, and the lively interest he took in his pupils, speedily procured for him a high reputation. Mr. Bell, from the outset, fearlessly took a place on a footing of perfect professional independence and equality; and to this circumstance, perhaps, it was owing, that he was very early invited to join the Anatomical Society, which at that time included amongst its members, Dr. Baillie, Sir William Blizard, Mr. Headington, Mr. Cline, Mr. Abernethy, Sir A. Cooper, Sir Everard Home, Mr. Wilson, and the anatomical professors of Oxford and Cambridge; and other no less gratifying proofs of the esteem in which he was held by the heads of the profession in London, were furnished with characteristic liberality.

About this period Mr. Bell associated himself with Mr. Wilson* in the school of Great Windmill-street; and at no time was that celebrated school, which had been the source of the fame of both the Hunters, conducted with higher approbation and greater success, than under the auspices of Mr. Bell. His mode of lecturing was admirably adapted to sustain the interest of the pupils. Even while engaged in repeating his demonstrations so as to make them intelligible to the students seated in the different quarters of the lecture-room, he always contrived, by slight variations in expression, or in the mode of illustration, to fix the attention of his auditors, and to impress his meaning in a manner wholly unattainable by a lecturer who confines himself to a monotonous repetition of what he has already said. His style of lecturing, when he had ceased to demonstrate from the *subject* before

* See Memoir of James Wilson, F.R.S.

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him, partook indeed, more of the nature of animated and close reasoning, delivered by a person intent on carrying conviction to the minds of his hearers, than of those uninteresting details of minute facts, which too often render lectures on anatomy vapid and intolerable to the student.

Mr. Bell's lectures were of a higher grade, resembling rather those discourses which he afterwards delivered in the Royal College of Surgeons of London, before the seniors of his profession, and in the presence of distinguished visitors of all ranks and professions; with respect to which, my learned and excellent friend, the present Bishop of Durham, well observed, that they conveyed to him the impression, not so much of a lecture, as of a man *thinking aloud*. It did not satisfy Mr. Bell that his pupils should be made acquainted with the mere facts: he seemed farther desirous that they should be able to apply those facts to the general system which he was engaged in illustrating; and that they should feel, if possible, the same interest in the pursuit by which their teacher was animated. Hence it was that, like another highly distinguished lecturer in a different department, Mr. Bell was accustomed, occasionally, to stop short at what appeared to himself the most interesting and commanding stations, in order to open to the companions of his journey, such *vistas*, on either hand, as might afford them a glimpse of the fertility and beauty of the regions through which they were travelling.*

In the year 1812, by which time Mr. Bell's reputation in London was fully established, he was elected a surgeon to the Middlesex hospital by an open poll, at which one thousand two hundred governors voted; and the immediate consequence of his election was a very large increase of the annual income derived from the fees of the pupils. In this hospital he, from the first week of his appointment, delivered clinical lectures; many of which attracted notice in the Medical Gazette, no less from the excellence of principles inculcated, than as admirable examples of that invaluable mode of teaching; and similar attestations of their value were spontaneously offered by many of the most esteemed members of the profession. One of those with which Mr. Bell had much cause to be gratified, was a note addressed to him by the late Dr. Gooch, from his sick chamber, in which that eminent physician says, that he could not refrain from expressing his high admiration of those lectures.

Mr. Bell had long been anxious to make himself acquainted with the subject of gun-shot wounds; and, as the hospitals of the metropolis afforded few materials for this purpose, the same energy in the pursuit of profes-

* Dugald Stewart's Essays, p. 510.

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sional knowledge for which he had been always remarkable, led him on two several occasions to relinquish his engagements in London, in order to familiarise himself with this department of practice. The first of those occasions was in the year 1809, immediately after the battle of Corunna, when the wounded, hurried home in transports, were landed on the southern coasts of England, almost in the same condition in which they had been carried from the field. An opportunity was thus presented of becoming acquainted with the peculiarities of wounds received in battle, such as has rarely occurred to a medical man unconnected with the military service. Nor was the opportunity lost to Mr. Bell, for, after having fully availed himself of it, he published an "Essay on Gun-shot Wounds," as an appendix to his "System of Operative Surgery." At that time the Peninsular military surgeons had not returned to London; and we were not then possessed of those larger works which we owe to them. But every one who peruses Mr. Bell's Appendix must be struck with the remarkable evidence which it affords of his close and accurate observation of the practice of the army and navy surgeons; and with the acuteness with which he anticipates almost every point of interest in this department of surgery. Accordingly we observe, from his late work, on the "Institutes of Surgery," that, after the battle of Waterloo, Mr. Hennen informed him that this Appendix had been his practical guide, in the arrangement and treatment of the wounded under his charge.

The second occasion on which Mr. Bell availed himself of a similar opportunity was after the battle of Waterloo. On that event he, and his brother-in-law and favourite pupil, the late Mr. John Shaw, were the first professional men from England who arrived in Brussels. This journey was undertaken chiefly for the purpose of obtaining cases and sketches in farther illustration of the subject; but, on finding himself surrounded with so much suffering, he at once lost sight of every selfish and individual object, and offered his services wherever they could be useful. At that time, and after such a conflict, the ordinary supply of medical aid was necessarily inadequate to the emergency; and Mr. Bell's offer, as may be well supposed, was gladly accepted. He was immediately put in charge of an hospital, and, for three successive days and nights, was incessantly engaged in dressing wounds, and operating on the wounded. On that occasion he afforded his professional assistance to no fewer than 300 men: and the drawings with which he was thus enabled to enrich his portfolio, have been referred to as the finest specimens of water-colouring in the English anatomical school.

It is not unworthy of remark, that to this expedition of Mr. Bell we perhaps owe the interesting volume, in which Sir Walter Scott depicts the

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same scenes, under a less appalling aspect than that which they presented to this eminent surgeon; for Mr. Lockhart, in his life of his illustrious relative,* informs us, that a letter addressed by Mr. Bell to his brother in Edinburgh, and written under the excitement which he had witnessed at Brussels, made so deep an impression on Sir Walter, that he immediately set off for the continent; and the volume which afterwards appeared under the title of "Paul's Letters to his Kinsfolk," was the result. It is less gratifying to add that the requital justly due to Mr. Bell for these disinterested exertions was snatched from him by others, who, after all the arrangements, which the emergency required, had been made by those already on the spot, repaired to Belgium under official authority, and, having made their reports to Parliament, received the thanks of the nation for services which had been in effect performed before their arrival. I have reason to think, however, that, on this, as on other occasions, Mr. Bell met with a reward which, to a man of his temperament, more than compensated him for the disappointment (if he ever felt it as one) in the unqualified approbation of his professional brethren, and in the reflexion that his unceasing zeal in the pursuit of the great objects of his profession, had happily placed him in circumstances to render an important public service, on one of the most memorable occasions in our national history.

Hitherto Mr. Bell had not deemed it necessary to become a member of the Royal College of Surgeons of London, being already a fellow of the Royal College of Edinburgh. But, as his reputation advanced, it was intimated to him, that, in order to avoid a question of professional privilege, he ought to become a member of the college; and, in the year 1812 he was admitted.†

A few years afterwards, he was appointed Professor of Anatomy and Surgery to the Royal College of Surgeons, and, after a considerable interval, a member of the council. To lecture before such men as Cline, Cooper, Abernethy, and others equally eminent in their profession; and not unfrequently before men, no less distinguished in other professions, can be to no man an easy task; and in Mr. Bell's case, the difficulty was enhanced by

* Vol 3, p. 347. This letter was addressed by Sir C. Bell to his brother G. J. Bell, Esq., who transmitted it to Sir W. Scott. "When I read it," said he, "it set me on fire."

† When Mr. Bell, in compliance with the regulations of the College, presented himself for examination, his reception was flattering in the extreme. It was on this occasion that the Examiners facetiously acquitted themselves by asking, with suitable gravity, Mr. Bell's opinion of the probable fate of *Napoleon Buonaparte*. And, immediately on receiving his answer, they declared themselves satisfied with the candidate's *proficiency*.

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the comparative failure of many excellent members of the college, who towards the close of their courses had been left with empty benches. But it was otherwise with the subject of this memoir. The theatre in which he lectured was crowded to the last; nor is it wonderful that this should have been the case, for these lectures were remarkably imbued with that exciting degree of interest which Sir C. Bell so felicitously imparts to his discourses. One of those lectures in particular made a lasting impression on all who heard it. Its object was to invite attention to the evidences of creative wisdom and design, afforded by anatomical researches; and, with that view, in a demonstration of the bones of the skull, and a comparison of their structure with the mechanical inventions of the architect, and the mason, the lecturer presented what was, at that time, a novel and beautiful illustration of a great truth which careless observers of nature are too apt to overlook. This lecture, and several others directed to the same object, were intended to remove a false impression then prevalent, as to the scepticism of medical men, and the sceptical tendency of their enquiries; and nothing could be better timed, or more triumphant, than the eloquent refutation of this fallacy, made by Sir Charles Bell in the course of these lectures; and since then, amplified and rendered generally accessible in more than one of the most popular of his many valuable publications.

Lord Brougham, who was, at that time, as he ever has been, in search of talent to aid him in the accomplishment of one of the favourite objects of his indefatigably active life, knew and appreciated Sir Charles Bell. He had previously applied to him for some papers on the animal economy, for insertion in the publication called *The Library for the Diffusion of Useful Knowledge;* and the lectures to which I have just alluded, suggested to his Lordship the value of a more enlarged comparison of the mechanism of the body, with the ordinary mechanical inventions of men. This suggestion gave rise to the publication of Sir Charles Bell's two papers on "Animal Mechanics," which became so deservedly popular, and eventually led to the illustrated edition of *Paley's Evidences of Natural Religion*, in which Sir C. Bell had the honour of co-operating with Lord Brougham—a task not unworthy of these distinguished co-editors, and towards which Sir Charles contributed much interesting matter.

As connected with this branch of the literature of his profession, and at the same time as indicative of the high reputation as a Physiologist which Sir Charles Bell had attained; it may be mentioned that he was one of the first in the list of those eminent men, in various departments, who were selected to fulfil the bequest of the late Earl of Bridgewater. That remarkable personage, as is well known, left a sum of £8000 in trust to the

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President of the Royal Society of London, for the purpose of rewarding the author of a dissertation on the power, wisdom, and goodness of God, as manifested in the works of his creation. But Mr. Davies Gilbert, the then President, shrunk from the responsibility of selecting the person best suited to carry the object of this will into effect; and having associated with himself, in the discharge of this duty, the Archbishop of Canterbury and the Bishop of London, they determined to subdivide the sum left to their disposal amongst the writers of eight several essays, illustrative of the subject proposed. In his will, Lord Bridgewater had expressed a desire that the power and construction of the human hand should be embraced in the dissertation; and when Sir Charles Bell was made aware that he had been selected as one of the essayists, he at once, and somewhat to the surprise, it is believed, of his Colleagues in the enterprise, chose that as the subject of his essay.

This work brings into view, a multitude of interesting and curious facts, presented in aspects equally striking and unexpected; while the whole volume is pervaded by a strain of reasoning, not only pre-eminently original, but which, perhaps, bears more directly on the great purpose of the noble testator, than any of the other powerful and effective treatises which have appeared under the same auspices. It has already gone through four editions.

On the accession of William IV. it was proposed by government, with the cordial sanction of the sovereign, to confer the distinction of knighthood, on a limited number of the most eminent men in science; and the individuals selected on that occasion to receive the Guelphic order, were, Sir C. Bell, Sir John Herschel, Sir David Brewster, Sir John Leslie, Sir James Ivory, and Mr. Babbage, the latter of whom assigned reasons for declining the honour. Previous to this, the order had been most deservedly bestowed upon Mr. König, the keeper of natural history in the British Museum, and subsequently upon Sir Henry Ellis, Sir Francis Palgrave, Sir Frederic Madden, Mr. N. Carlisle, and others.

I have already said that Sir C. Bell had succeeded to the school of Great Windmill-street. He had paid to Mr. Wilson a large sum of money on this account, and had engaged to pay him, prospectively, a share of the annual emoluments; and by his own indefatigable exertions, with the invaluable assistance of his brother-in-law, Mr. John Shaw, the school had resumed its former repute. To that school, as preceding memoirs have shown, we owe some of the most distinguished men in the medical profession: it is enough to name William and John Hunter, Baillie, Cruikshank, Thomas, Wilson, and Brodie. In truth, it had become, as it were, the

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portal through which professional merit passed into distinction, in the West End of London; and after the destruction of that school, in the manner to be immediately explained, Sir C. Bell has been repeatedly heard to regret, not the pecuniary loss to himself, which was his individual misfortune, but the extinction of the means which he had thus possessed of introducing deserving men to the favourable notice of the profession. This arose from the establishment of the London University, now University College, within ten minutes walk of Windmill Street, and also in the neighbourhood of the Middlesex Hospital, to which Sir C. Bell was professionally attached. He saw at once, that an institution, in some respects similar to his own, supported by men of great opulence and influence, with a fund of £150,000 at their disposal, was a rival, against which it would have been desperate for any private individual, dependent solely on his own resources to have contended. The governors of the University were likewise sensible that such would be the inevitable effect of their institution. They foresaw that the success of the University school would prove fatal to that of Windmill Street, and seriously detrimental to the private interests of the individual then at the head of that establishment. By way of atonement, therefore, to Sir Charles Bell, for this injury, and fully, alive at the same time, to the advantage to themselves to be derived from the attraction of his name, they spontaneously proposed to place him at the head of their new medical school; and he delivered the general opening lecture in this section of the institution, which was followed by a course of characteristic lectures on Physiology.

In the year 1836, at which period Sir C. Bell's reputation, chiefly in consequence of his discoveries connected with the Nervous System, had become European, he was invited, by the unanimous and unsolicited vote of the patrons, to accept the chair of surgery in the University of Edinburgh. Nothing could have been more flattering to him, or more decidedly indicative of the high station in his profession which he attained, than the circumstances attending this invitation. Yet, it was not without surprise that his friends in London learnt that he had made up his mind to leave them, and to take his place, as a professor, in that celebrated Northern University. But we are not without examples in the medical profession, of eminent men being induced, like Haller,* in the full maturity of their fame, to return, as it were in triumph, to the place of their nativity; and nothing certainly can be more striking than the contrast between the circumstances of professional dissension and discord under which, in early

* See Memoir of Albert de Haller, M.D.

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life, the subject of this memoir left his native city, and the kindly and gratifying auspices under which he returned to it.

In London, after Sir C. Bell had ceased to be a lecturer, his practice, though extensive, was chiefly in nervous affections, to which his high reputation entitled him to the first place. But while it could not fail to be agreeable to him to find that his discoveries were the source of the esteem in which he was held in consultation, still he felt that, in this department of practice, he was called upon to act rather as a physician than as a surgeon; and that his practice as the surgeon of a large hospital, in which he had been the principal operator for twenty years, and his knowledge and experience as a teacher, acquired at the expense of a life of labour, were comparatively unavailing to the junior members of his profession, to whom, throughout his life, it had been his greatest pleasure to communicate information. To say nothing, therefore, of the social and family ties by which Edinburgh was endeared to him, and notwithstanding the high position he occupied in London, I am less surprised than some of my contemporaries have been, that Sir Charles should have accepted a situation in Edinburgh, which placed him at once at the head of his profession in that city, and at the same time enabled him to render useful, to those on the threshold of the profession, all that he had himself done for surgery, and all that he had learnt from his intimate personal communication with the most distinguished professional men of his time.

That Sir Charles Bell left London with the esteem and regard of the profession was proved to him in the most gratifying manner, by the splendid testimonial which he received from it on his departure; and his reception in Edinburgh, not only by his professional brethren but by all classes, combined with the respect and attachment of his students, show that his friends were not mistaken in their anticipations. In that city, he continues to pursue, with undiminished zeal, the cultivation of physiology and surgery. As a teacher, no one ever had a higher reputation. As a consulting surgeon, it is needless to say that he holds the first place; while his occasional papers, read in the Royal Society, prove that as he advances in life he has lost nothing of that untiring energy, in the pursuit and diffusion of knowledge, which has uniformly marked his career. Nor is it the least agreeable part of my task to add, that years have passed without impairing his robust and vigorous constitution, which gives happy promise of a long continuance of his eminently useful and valuable life.

The best eulogy of Sir Charles Bell is to be found in the catalogue of his writings; they evince his great zeal in the prosecution and advancement of his profession. I have been unwilling in the preceding pages to interrupt,

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farther than I could avoid, the brief narrative of his life by any particular description of his works; I must now, however, direct the reader's attention to the numerous and important publications that have issued from his pen. His first publication was, *A System of Dissections, explaining the Anatomy of the Human Body, the manner of displaying the Parts and their Varieties in Disease.* This was in folio, the first volume appeared in 1799, and the second in 1801. This was a mode of teaching not then practised; although the example which he set has been since followed in an innumerable variety of forms. The plates are all from drawings made by the author, and give most faithful representations of the different parts of the human body as they appear on dissection. The folio size was found to be inconvenient to students, and the letter-press, subjected to some alterations, and with many additions, was arranged in 2 vols. 12mo., the third edition appearing in 1809.

The next work in which he took a part, was, *A System of Anatomy, by John and Charles Bell.* This system of anatomy stands unrivalled. For facility of expression, elegance of style, knowledge of the views of former anatomists and physiologists, and accuracy of description, I know of no work with which it can be compared. I eagerly embrace this opportunity to express the obligations I lie under to the authors, for it was my chief guide in the acquisition of anatomical knowledge; and this it imparts free of dry technology and insipid detail. The doctrines of the ancients are in all cases fairly stated, and in many most happily ridiculed. To the student who has attained the rudiments of anatomy by dissection and the aid of the ordinary manuals, this work may be recommended as the most useful and the most interesting on the branches of study upon which it professes to treat. The first volume, containing the anatomy of the bones, muscles, and joints, is by John Bell; the second is by the same, on the anatomy of the heart and arteries; the third is on the nervous system, including the organs of sense, by Charles Bell; and the fourth, also by Charles Bell, is on the viscera of the abdomen, the parts in the male and female pelvis, and the lymphatic system. To this volume there is an appendix containing a description of the venous system, and the anatomy of the teeth, in order to complete the anatomy of the human frame.

The preceding work was afterwards illustrated by Sir Charles Bell, with *Engravings of the Arteries,* 8vo. published in 1801, in 1806, and again in 1811. This was followed by *Engravings of the Brain,* in 1802, in which is to be found some *Observations on the Communication of the Ventricles of the Brain;* and, by *Engravings of the Nerves,* in 1803; the latter two in quarto.

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In 1806, he published *Essays on the Anatomy of Expression in Painting*, in 4to., in which he points out the importance of a knowledge of anatomy to the artist. He displays the errors into which artists may be betrayed by an exclusive attention to the antique; and he most happily shows how an ambitious display of anatomical knowledge necessarily leads to inaccuracy and caricature. He treats of the skull and form of the head, of the muscles of the face in man and in animals, depicts the several passions by a comparison of these, marks what are peculiar to man, embodies the idea of a living principle in the expression of emotion, and finally treats of the economy of the living body as it relates to expression and character in painting. The work is both elegant and useful, and no painter should be ignorant of its contents. A second edition, with many additions, was put forth in 1824. It is illustrated by his pencil, in such a manner as to demonstrate that had he not chosen another path to eminence, a distinguished place in this captivating art must have been conceded to him. I have reason to know, indeed, that amidst his severer and more arduous duties, his pencil has proved a source of refined and elegant relaxation to himself, and of delight to his friends and domestic circle.

His next work was, *A System of Operative Surgery, founded on the basis of Anatomy*, in 2 vols. 8vo., of which the first edition was published in the year 1807, and to a future edition of which he added the *Appendix on Gun-shot Wounds*, before adverted to. This work is, indeed, what it professes to be, "a calm and disinterested view of the surgery of the present day, clearly set forth and deduced from actual observation, and grounded on correct knowledge of anatomy." It is a concise system of practical surgery. The author professes it to be original, not collected from his library, or by reference to books, but the result of actual observation. He estimates fairly the great benefits he had enjoyed to enable him to perform such a task; and he most delightfully acknowledges the strictness and severity with which his anatomical education had been conducted by his eminent brother. He describes no operation in these volumes that he had not performed—"from bleeding in the arm, to lithotomy with the knife alone; from tying the umbilical chord, to the operation of the Cæsarean section."

In 1810, he published *Letters concerning the Diseases of the Urethra*. These relate entirely to stricture, of which he points out the varieties, and the practical conclusions to be drawn from such distinctions. In this work, Sir Charles questions the soundness of the theories of Sir Everard Home as to the cause of stricture in connection with a muscular structure of the urethra, and exposes the abuse of caustic in the treatment of the disease.

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In 1811, he printed, for distribution among his friends, a small essay, entitled, *Idea of a New Anatomy of the Brain*, in which he, for the first time, announced those views of the nervous system on which so large a portion of his fame rests. In this work he contends,—

"That the cerebrum and cerebellum are different in function as in form; that the parts of the cerebrum have different functions; and that the nerves which we trace in the body are not single nerves possessing various powers, but bundles of different nerves, whose filaments are united for the convenience of distribution, but which are distinct in office, as they are in origin from the brain.

"That the external organs of the senses have the matter of the nerves adapted to receive certain impressions, while the corresponding organs of the brain are put in activity by the external excitement. That the idea or perception is according to the part of the brain to which the nerve is attached; and that each organ has a certain limited number of changes to be wrought upon it by the external impression.

"That the nerves of sense, the nerves of motion, and the vital nerves, are distinct through their whole course, though they seem sometimes united in one bundle; and that they depend for their attributes on the organs of the brain to which they are severally attached."

In 1813, Sir C. Bell published, in folio, a volume of *Engravings from Specimens of Morbid Parts, preserved in the Author's Collection in Windmill-street, and selected from the divisions, inscribed Urethra, Vesica, Ren, Morbosa et Læsa, containing specimens of every Disease which is attended with change of structure in these parts, and exhibiting the Injuries from the Bougie, Catheter, Caustic, Trochar, and Lithotomy-knife, incautiously used, with Observations.* The extent of the collection would have enabled the author to treat of so great a variety of morbid cases, but the work did not proceed beyond the first fasciculus of twelve plates. The observations, by which they are accompanied, carry an especial interest to the practical surgeon.

In 1814, he published his work on Gun-shot Wounds, which has been already noticed, as an appendix to his Operative Surgery.

In 1816, he commenced the publication of *Surgical Observations; being a Quarterly Report of Cases in Surgery, treated in the Middlesex Hospital, in the Cancer Establishment, and in Private Practice.* Five parts of this work appeared. The details of the cases are noted in their progress in the form of a journal, and the practical lessons are given in accompanying remarks, being selections from his clinical lectures. It is almost unnecessary to add that these reports contain a vast quantity of important matter upon the chief subjects of surgical practice.

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In 1819, he published a very interesting *Essay on the Forces which Circulate the Blood; being an Examination of the difference of the Motions of Fluids in Living and Dead Vessels;* one object of which was to combat the doctrine of the French Physiologists. He contends that if the principles of mechanism, or of chemistry, be admissible in the explanation of vital phenomena, they are incapable of solving our difficulties. With regard to the power of the heart, he says, that—

"Although it were admitted that the force of the heart is sufficient to carry the blood through the whole extent of the arterial system, it cannot be made to account for the inequalities which we observe in the force of the arterial actions. It cannot account for increase and diminution of secretion; for sudden and partial growth; for wasting and decay of parts, while the general body is vigorous. It will not account for an organ being plentifully supplied with circulating blood one hour, and the next left with a diminished quantity."

The heart must not be looked upon as the only agent circulating the blood; numerous experiments by Parry, and other physiologists, have shown that the arteries themselves are material instruments in carrying on this essential process of the animal system. The tortuous structure of particular arteries, chiefly supplying the superior portions of the body with blood, has generally been considered as designed for the purpose of retarding the current of blood circulating in those vessels. Mr. Abernethy has said that "None but a fool could believe that a curved artery could be for any other purpose:" but Sir Charles Bell has viewed the subject in another and more important point of view; and has pointed out a beautiful provision of nature, in adapting this particular conformation of parts to those situations in which the part supplied is subject to occasional increase of activity, namely, the uterus, testis, stomach, spleen, &c. Sir Charles shows,

That a tortuous artery is more capacious, more active; that its activity is more under the influence of the part; that in its activity it dilates more freely, as well as contracts more powerfully. In other terms, an artery, in proportion to its tortuosity, becomes less dependent on the force of the blood transmitted from the heart, more on the excitement of the organ which it serves.

Sir A. Carlisle connected the peculiarly tortuous arrangement of some arteries, in the tardigrade animals, with the slow motion of their muscles; but Sir Charles Bell has made it to account for their long-continued action in these animals.

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SIR CHARLES BELL, K.H., F.R.S. L. & E.

In 1810 I have mentioned that Sir Charles Bell published *Letters on the Urethra.* In 1820 he put forth a more complete work on the diseases of this part of the body, together with that of the bladder, prostate, and rectum. Its title was *A Treatise on the Diseases of the Urethra, Vesica Urinaria, Prostate, and Rectum.* This edition was arranged and accompanied by notes, by his nephew, the late Mr. John Shaw. The criticisms of the editors of the foreign editions of this work, and the opinions of foreign authors on these diseases, render this edition a most useful manual or book of reference on the subjects treated of. An Appendix gives a description of the preparations by which the work was illustrated, and which formed the fourteenth division of the Museum at Great Windmill-street.

In 1824 Sir Charles Bell published *Observations on Injuries of the Spine and of the Thigh Bone,* in 4to. This work consists of two lectures delivered at the school in Great Windmill-street, the first of which was in vindication of the author's opinions against the remarks of Sir A. P. Cooper, Bart., and the second on the late Mr. John Bell's title to certain doctrines advanced by the same distinguished surgeon. The points of controversy, in the first lecture, relate particularly to the circumstances connected with Fractures of the Spine: how far the symptoms attendant upon this kind of accident may be attributed to the shock or concussion given to the spinal marrow, and the prognosis to be formed, according to the existence or absence of subsequent paralysis. Sir Charles's chief object in this lecture seems to be, to distinguish the symptoms of inflammation of the membranes from those of compression or concussion of the spinal marrow. He objects to the proposal of Sir A. Cooper to trepan, in cases of depressed bone occurring in fractures of the vertebræ. Sir Charles makes allusion to an extraordinary case, of which plates are given, where a separation had taken place between the last dorsal and first lumbar vertebræ, and the spinal marrow torn asunder, yet the child survived thirteen months after the accident, and then died of croup! In the second lecture, Sir Charles points out the importance of attending minutely to the anatomy of parts, in order correctly to understand the conditions produced by accident or disease. He shows the difference of structure of the centre, and of the extreme parts of the thigh bone, to illustrate necrosis. He points out the necessity of raising the thigh during the sawing of the bone in amputation of the thigh, to prevent projection of the bone, and commends the use of the double inclined plane, in fractures of the femur. He enters minutely into the actions of the muscles, particularly upon the trochanters, to illustrate the manner in which fractures of this part are to be treated. He upholds the reputation and originality of his distinguished brother, with respect to opinions generally en-

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tertained relative to fracture of the neck of the thigh bone; and throughout the work estimates, fully and justly, the advantages that arise from an acquaintance with the history and literature of the profession.

The most important professional studies of Sir Charles Bell are to be found in his various papers in the Philosophical Transactions, commencing in the year 1821, relating to the Nervous System. This work, which may be said to be still in progress, has been given also to the public, in a volume published in 1824, entitled *An Exposition of the Natural System of the Nerves of the Human Body;* to which an *Appendix* was printed in 1827. Then followed a still more extended work, *The Nervous System of the Human Body, embracing the papers delivered to the Royal Society on the subject of the Nerves,* in 1830; and a still more complete edition, by the addition of cases and illustrations, in 1836.

Although we are acquainted with the offices of the brain and nervous system, we have no precise information as to their mode of operation. On this subject the learned and ingenious of all ages have speculated largely, but with little profit. Scanty, indeed, is the real knowledge which has resulted from their speculations. The brain, we know, has been most carefully and minutely dissected; each individual portion has been examined with unusual accuracy, and to each part it has been endeavoured to assign its separate function. Democritus, Anaxagoras, and others, dissected the brain 3000 years ago; and now, at this distant period, we are not able to pronounce further of this wonderful and anomalous organ, placed (as Harwood beautifully expresses it), "on the doubtful confines of the material and spiritual worlds, than our forefathers, who declared that it is the fountain and the reservoir, the beginning and the end, of the whole nervous system, where every idea originates, and to which every sensation is referred." The opinions of the ancients, as to the nature and uses of the nervous system, were very wide of the truth. Nerve is a term applied indiscriminately by them to tendon, to ligament, or to blood-vessel. The nerves were considered by Hippocrates to terminate in the bones and the muscles, and so to produce voluntary motion. The first anatomist who appears to have discovered the connexion which exists between the nerves and the brain, is Herophilus, and he looked upon them as the instruments of sensation. The nerves of sensation were regarded by Erisistratus as originating from the brain, but those of motion from the membranes. Galen fixed those of voluntary motion to spring from the spinal chord. It was in later times that the brain, and other parts of the nervous system began to be investigated with any beneficial result; and the progress of this knowledge has, doubtless, been much delayed by the manner in which the research has been prosecuted,

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I allude to the way in which the brain has hitherto been displayed in ordinary dissection. There is, doubtless, much convenience in examining the brain, as we usually do, to detect its diseased condition, and the organ is thus less disturbed than by any other mode. This manner, for the purpose of examining the structure of the brain, is very justly condemned by Dr. Spurzheim. He remarks on the absurdity of cutting this organ horizontally or obliquely from above or from below, and removing it by slices. Such a mode of investigation cannot fail of destroying the different parts, and separating them from their natural connexions.

A knowledge of the functions of the nervous system, and the means by which they are exercised, are probably only to be obtained by the combined aid of minute anatomical investigation—a close attention to effects produced by a well-directed and arranged series of experiments upon living animals—and an attentive observation of the phenomena which present themselves under disease. Pathology, has, perhaps, thrown more light upon physiology than any other means with which we are acquainted; but unless this can be applied in relation to structure, I believe that the functions are little likely to be developed.

One of the principal discoveries of modern times, as regards the anatomy of the nervous system, consists in having detected the origination of the nerves to be generally in pairs; and these to consist of anterior and posterior bundles—the former taking an ascending and the latter a descending direction. This structure is best seen in the spinal chord, where these bundles are peculiarly distinct; and it is remarkable that no union of the fibres of the two portions takes place, until the posterior bundle has formed an enlargement or ganglion. Nerves belong either to the cerebrum, cerebellum, medulla oblongata, or medulla spinalis; and are distributed to the organs of sense, the muscular system, and the vessels—hence, they have been considered as the nerves of the senses, vital and involuntary nerves, and nerves of voluntary motion. The distinction between nerves of sensation and nerves of motion is exceedingly important, and enables us to explain many hitherto inexplicable phenomena; and the structure of ascending and descending bundles, goes to assist us in the solution of many difficulties. In the introduction to the "Nervous System of the Human Body," Sir C. Bell thus expresses himself:

"The view which I have taken of the nerves has not been the result of hasty and premature conjecture, but of patient investigation. From the first year of my delivering lectures, my demonstrations of the brain were given in a manner not then common; and to this peculiarity in the manner in which I looked on the connexions of the brain, I trace

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the origin of opinions different from those hitherto entertained. By the time I began to lecture in Windmill-street, I was enabled to follow, in my demonstrations of the nerves, an arrangement which has given a new interest to the subject; and which, by imperceptible degrees and improvements from year to year, during every succeeding course of demonstration, has at length developed the comprehensive system which I have now to present to the reader.

"The steps by which I have cautiously advanced, have been observed only by my older and more diligent pupils; who, becoming interested in the subject, have returned, during successive years, when it was under consideration, to hear how I continued to prosecute it. They have seen the system gradually developed, and have heard me announcing the desiderata as the enquiry proceeded, and explaining the difficulties; and they have seen how the points which were in one season the most obscure, have, by diligent investigation, become those of the very highest interest in succeeding courses."

Sir Charles Bell arranges the nerves under four divisions: those of sensation, voluntary motion, respiratory motion, and the sympathetic system. The offices of the spinal marrow he regards as of a double order—those in relation to the brain, and those having powers emanating from itself or independent of the brain. In each lateral portion of the spinal marrow there are three tracts or columns—one for voluntary motion, one for sensation, and one for the act of respiration. The anterior one is for motion, the posterior for sensation, and the middle one for respiration; the two former extend up into the brain, the latter one stops short in the medulla oblongata.

The basis of Sir Charles Bell's researches was, that whatever the influence might be, which was transmitted to the simple filament of a nerve, it was inconceivable that this influence should be transmitted at one and the same time, *from* the sensorium and *to* the sensorium.

His attention was then directed to what have been called common nerves. He found our first authorities affirming that the same nerve is at once a nerve of motion and a nerve of sensation. But this did not accord with his view of the phenomena presented by the working of the system; and after many minute dissections of the nerves, which led to no satisfactory result, he had recourse to their roots; and observing the perfect regularity of the origin of the roots of the spinal nerves, it occurred to him that he had found the means of solving the difficulty. The question which he proposed to himself was, whether the roots emanating from the *anterior* column of the spinal marrow, and those emanating from the *posterior* column were alike in functions; or whether on the contrary these were not distinct nerves, the one conveying an influence from the sensorium, and the other to it? Experiment verified the conjecture on which this enquiry rested, and proved

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that these roots were essentially different; the *anterior* root only, according to Sir C. Bell, commanded the action of the muscles.

This suggested farther inquiries, not by means of the painful process of experimenting on the lower animals, but by careful dissection of the dead, and the accurate observation of the symptoms attending diseases of the nerves. In the course of his investigations, Sir Charles Bell had observed a comparison of the nerves going off from the spinal marrow, to the nerves originating in the encephalon or brain. The spinal nerves moreover were remarkable for undeviating regularity, while the nerves, whose source was in the brain, were no less remarkable for an appearance of irregularity; and and it occurred to him that if an explanation of this phenomenon could be obtained, it might serve as a key to the whole nervous system. Pursuing that line of enquiry, therefore, he perceived that there was one of the nine nerves of the brain, which exactly resembled a nerve of the spine; for each spinal nerve has, as we should remember, two roots—the anterior and posterior—and the posterior root is also distinguished by a knot or ganglion—that is, a little hard knot of nervous matter; and he found that the fifth nerve of the brain had in like manner two roots, and that on one of them was a ganglion. Santorini and Wrisberg had observed the two roots of the fifth pair, and Soemmering and Prochaska had remarked upon the resemblance between the spinal nerves and the trigemini.

Now Sir C. Bell's previous experiments had, in his opinion, proved that the anterior roots of the spinal nerves commanded the muscles; and although the use of the posterior root might have been conjectured, he thought it had not yet been proved. In the distribution, however, of the fifth nerve of the brain, a field was opened to ascertain the office of the posterior or ganglionic root; and the sum of his experiments is, that the sensibility of the head and face, and of all the surfaces, external and internal to which it is distributed, is traceable to the ganglionic division of the fifth nerve of the brain. Hitherto the prevailing opinion had been that ganglions cut off sensation; whereas according to Sir C. Bell it would appear that the sensibilities of the head depended on the ganglionic nerve of the brain; and hence he inferred that the posterior or ganglionic root of the spinal nerve was the source of sensibility over the whole frame.

When an outline or plan of the whole nervous system was exhibited by Sir Charles Bell to his pupils, the contrast between the one class of nerves and the other is said to have been very striking. The sensitive or voluntary nerves presented a remarkable appearance of regularity, while the other class of nerves was distinguished by the extraordinary irregularity of their distribution. Sir C. Bell observed that all these irregular nerves diverged

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from one and the same source—namely, a column of the spinal marrow, different from that in which the sensitive and voluntary nerves originated: and by a succession of anxious enquiries and experiments, he endeavoured to prove that the act of respiration was traceable to these irregular nerves; and thus to establish the existence of what he has called the *system of respiratory nerves.*

It is impossible in a sketch, such as the present, and within the limits to which I am obliged to confine myself, to convey an adequate idea either of the nature or of the practical importance of these researches. Neither do I profess to attempt to reconcile the discrepancies in the systems propounded by Sir Charles Bell and others. I am not sufficiently sanguine to consider the nervous system as yet fully developed. Time, and a farther careful examination into, and an investigation of, facts, particularly those of a pathological nature, are, I conceive, still requisite to display the subject completely and satisfactorily to all inquirers. In this curious and intricate field of research, the labours of Sir Charles Bell will always stand pre-eminently distinguished. His various Essays on the Nerves of the Face and his illustrations of these nerves under disease, are of the highest importance and deepest interest. They require minute attention, inasmuch as they lead to practical distinctions between local disorder of the nerves, and apoplectic conditions of the brain, with which they have been too frequently confounded. Sir Astley Cooper, with his characteristic candour and liberality, was, I believe, the first to acknowledge the high value and importance of these researches; and Baron Cuvier, on his death-bed, when conscious that his face was twisted to one side, remarked to his attendants, that it afforded another proof of the truth and accuracy of Sir Charles Bell's opinions. The Essays in which this subject is illustrated, consist of eleven papers read to the Royal Societies of London and Edinburgh; for some of the earlier of which, Sir Charles received from the Royal Society the George IV. medal.

In 1826 he put forth an edition of John Bell's *Principles of Surgery*, in 4 vols. 8vo., and illustrated the work by notes. This important publication is thus rendered accessible to the profession generally: the quarto edition was too expensive for the multitude.

I have already alluded to the circumstances connected with the Bridgewater Treatises. Sir Charles Bell was well selected to display *The Hand, its Mechanism and its Vital Endowments as evincing Design.*

Sir Charles cannot see how scepticism should arise out of the contemplation of the structure and mechanism of the animal body, and his efforts throughout this work are directed to produce the same feeling and conclusion in the minds of others. That he has succeeded in this, his most laudable

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object, authorities justly to be prized have already declared; and I can only refer all those who are capable of enjoying a philosophical view of one of the most interesting subjects in physiological science, to an attentive perusal of the Essay.

The last surgical work which Sir Charles Bell has published, appeared in 1837, under the title of *Institutes of Surgery*. In this work he has arranged the subjects in the order of the lectures which he delivers in the University of Edinburgh.

Besides the publications noticed in the preceding pages, he has contributed to some periodical works, and particularly to the Medico-Chirurgical Transactions. It is necessary to record the following communications:—

1. (Vol. III., p. 171) *Account of the Muscles of the Ureters, and their Effects on the irritable States of the Bladder.* These muscles appear to have escaped the attention of former anatomists. They are to be seen by dissecting up the inner coat of the bladder, in the form of two strong fleshy columns, descending from the orifices of the ureters towards the orifice of the bladder, where they unite and run towards the middle lobe of the prostate gland, into which they are inserted. Their use is to assist in the contraction of the bladder, and at the same time to close and support the mouths of the ureters.

2. (Vol. IV., p. 335) *On the Muscularity of the Uterus.* Sir Charles refutes the prevailing notion as to the confused and scarcely perceptible motion of the muscular fibres of this organ. He shows that the most important layer has been overlooked—an outermost layer, which covers the upper segment of the gravid uterus, the fibres of which arise from the round ligaments, regularly diverge, spread over the fundus, and unite and form the outermost stratum of the muscular substance of the uterus. The author has enjoyed remarkable opportunities of dissecting the uterus, in all its conditions, gravid and unimpregnated; and he gives a minute and interesting account of his investigations. The paper contains an account of an operation of the Cæsarian section, and the appearances upon dissection.

3. (Vol. 12, p. 213.) *On the varieties of Diseases comprehended under the name of Carcinoma Mammæ.* The cancer ward of the Middlesex Hospital afforded to Sir Charles Bell great facilities for observing this formidable disease. Its intractable nature, the number of unsuccessful operations for its relief, and the natural dread entertained of the knife, have tended much to throw these cases into the hands of empirics, who, neither endowed with a knowledge of pathology, or actuated by principle, but

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solely guided by avarice, have taken every advantage of suffering humanity, and held out to the ignorant the possibility, nay, the certainty of a cure without submission to any operation. *Human sufferings and human credulity afford a never-failing harvest.* Quackery is an evil

"which walks uncheck'd, and triumphs in the sun."

Sir Charles Bell says that "by much the larger portion of patients received into the cancer ward of the Middlesex hospital, have spent their last penny; and, what is worse, they have lost that precious time in which they might have been cured, in attendance on a set of the most unfeeling wretches that ever disgraced a country." He gives a history of the carcinoma—he describes also other diseases, differing in some measure from the true carcinoma, but of the same formidable nature; and then considering the character and changes of the more common form of the disease, he gives instances of the mistakes liable to be made in the treatment; and by marking particularly the changes to which it is subject, he points out the deceits that are practised on public credulity.

In private life Sir C. Bell is distinguished by unpretending amenity, and simplicity of manners and deportment; and by those domestic virtues and tastes which have proved the solace and best reward of a life unceasingly devoted, as his has been, to extend the limits of professional and general knowledge. He is entitled to be held up as an example and incitement to the medical student, who, with liberal and enlarged views, looks to the approbation of his profession as his best reward. If such a life of independent exertion were not to lead to an honoured decline, then might we indeed say, that there is still something wanting to stimulate to excellence in the most useful of all professions.

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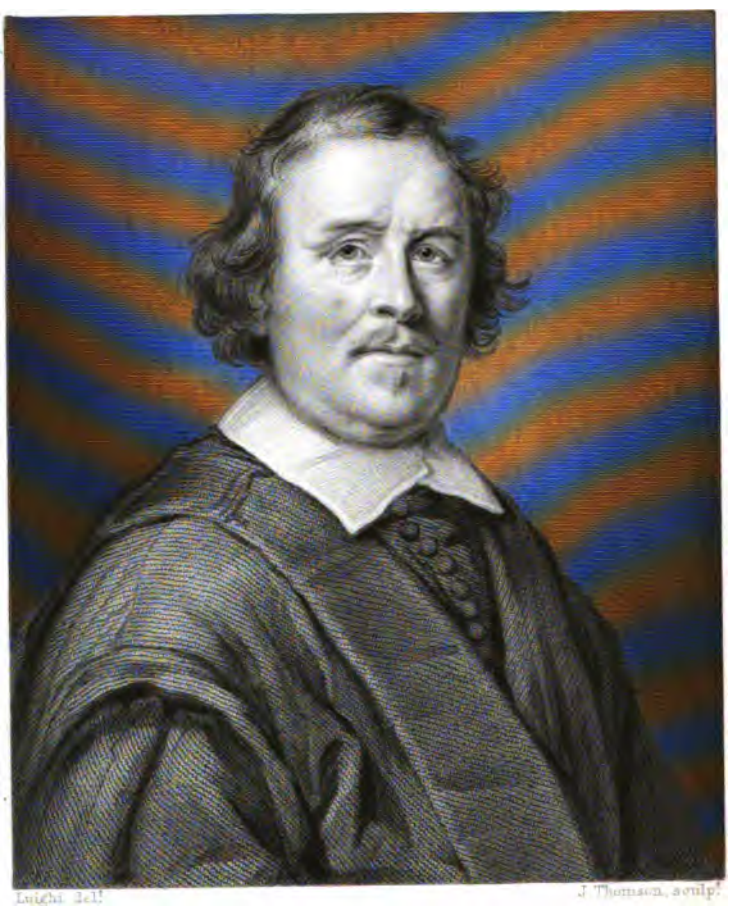

Luigi del.

J. Thomson, sculp.

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HERMAN BOERHAAVE, M.D. F.R.S.

"A good fame is as the beams about the Sun, or the glory about a holy picture, that shews it to be a saint: though it be no essential part, it rises from the body of that virtue, which cannot choose but shine and give a light through all the clouds of error and destruction."

FELLTHAM.

HERMAN BOERHAAVE, one of the most celebrated physicians of the eighteenth century, was born at the village of Voorhout, near Leyden, on the 31st of December, 1668. His father was a clergyman, and well skilled in the Hebrew, Greek, and Latin languages, and he destined his only son Herman to succeed him in the church. His education was accordingly directed to this object; and he received preliminary instruction in Latin and Greek and Universal History. His progress was such, that at the age of eleven he had acquired sufficient ability to translate, and even to compose in Latin. At the age of fourteen he was sent to the public school at Leyden, where he manifested extraordinary ability, and at sixteen was admitted into the University. He attended Suenguerd's Lectures in Logic, Natural Philosophy, Metaphysics and Ethics; and he so speedily obtained a proficiency in those studies as to be enabled publicly to maintain disputations in them. He had the advantage of attending the learned Gronovius, and other great masters. He studied Rhetoric, Chronology, and Geography under Ryckius; and Hebrew and Chaldee under Trigland and Schaaf. He turned his attention to Mathematics; and soon compassing Geometry and Trigonometry, he studied Algebra with Volder.

At the age of twenty-one he delivered an Academic oration under the presidency of Gronovius—*De Summo Bono;* to prove that the doctrine of Epicurus concerning the chief good, was well understood by Cicero, and he received a gold medal as a mark of approbation for this exercise. In 1690, he took a degree in Philosophy and delivered a thesis, under the presidency of Volder—*De Distinctione Mentis a Corpore,* in which he vigorously assailed the doctrines of Epicurus, Hobbes, and Spinosa; and he shortly after held a

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public disputation in Theology, having had for his instructors Trigland, Spanheim, and Markius. Hitherto his views had been directed to divinity as a profession, to complete his studies in which (having had the misfortune to lose his father), he undertook to teach Mathematics, by which he gained an introduction to John Vandenberg, the burgomaster of Leyden, who recommended him for the examination of the MSS. of Isaac Vossius, purchased by the University, and also advised him to join the study of physic and philosophy to theology. This determined his future course, as a predilection for those studies induced him to resolve upon taking a degree in physic before his ordination. He appears to have laboured hard to acquire a solid basis for medical inquiry by a diligent attention to anatomy:—he not only studied the works of Vesalius, Fallopius, and Bartholin, witnessed the public dissections and demonstrations by Nuck; but he also most assiduously dissected, and visited even the slaughter-houses to make observations upon the structure of the different parts in various animals. His practical knowledge of anatomy was, notwithstanding those exertions, defective, as his works show. The writings of the great father of physic, Hippocrates, he most carefully studied, because he found, from a perusal of the Greek medical authors posterior to this writer, there was little of novelty to be found; but he did not altogether neglect the moderns, for in particular he esteemed the works of Sydenham, and expressly says, "that he frequently perused him, and always with greater eagerness." He made himself acquainted with Chemistry and Botany, and then went to the University of Harderwick, in Guelderland, where, in July, 1693, he took the degree of Doctor in Physic; his thesis on this occasion being *De Utilitate Inspiciendorum in ægris Excrementorum ut Signorum.* At this period the union of the two functions of minister of the church and doctor of medicine was not common; but some might be named who had joined those duties and professions, and the subject, as a matter of professional history, may deserve a short notice in this place.

The union of physic and the priesthood is to be found in the *Hiero-iatroi* of Egypt; and to the time of Hippocrates, the practice of medicine was principally engrossed by the priests, and the cures they performed were attributed to their gods. In the article on Æsculapius, with which this work commenced, I endeavoured to show how medical learning had been treasured up by the priests; and that they regarded the several divisions of the human body as subjected to the operations of one of the deccans, or aerial demons, who presided over the triple divisions of the twelve signs, and that to these the priests made their invocations, and assigned their cures. Hippocrates detached medicine from theology, and elevated it into a science.

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Still priests were to be found who attended to various diseases, and in later times monks and canons in abundance availed themselves of the double means of filling their coffers, by the employment of all the terrors of the church, and the allurement of the inspiring hopes of the physician. To aid in this base object, charms and various mystic means were resorted to; and to such an extent did this practice prevail, that in the 12th century, under the pontificate of Calistus II, the first Lateran Council, held in 1123, peremptorily forbid the interference of the clergy with the sick in any other way than as ministers of the consolations of religion. This was followed up by the council of Rheims, in 1131, under the pontificate of Innocent II. These ordinances, however, it would appear were ineffectual, as in the second Lateran Council in 1139, monks and canons are threatened with severe penalties for neglecting their religious duties, and applying to medicine as a means of "obtaining ungodly lucre:" *pro detestanda pecunia sanitatem pollicentes.* The proceeds derivable from this source must have been immense, for both the decrees of councils and the anathemas of the church were held in disregard and openly violated; nay, the doctrine of resistance was inculcated by the clergy on the minds of the laity, and thus the principles of the reformation were prepared for and met with a ready reception.

Throughout Europe, but particularly in France, in later times, the duties of the physician were chiefly performed by ecclesiastics. Clerks and monks only were given to study, and they alone were considered capable of treating diseases. Among abbés, canons, bishops, &c., who have been physicians to their sovereigns and other distinguished characters, may be enumerated John Lavantage, Eustache Cailleux, Fulbert, bishop of Chartres, Lombard, bishop of Paris, Roger of Provence, physician to Louis VIII, Robert of Douay, a prebendary and physician to Margaret of Provence, Obizo, abbot of St. Victor, physician to Louis the Big, Rigord, a monk of St. Denis, and author of the Life of Philip Augustus. A prohibition of physicians to marry, was only abolished by a special bull pronounced by the cardinal D'Estonville, in the year 1452; and this measure contributed not a little to effect the separation of the clergy from Medicine. Cabanis* has endeavoured to account for the union of these offices in the same person. He says that the priests soon seized upon the province of Medicine and found it no difficult matter to combine it with their other instruments of power—that the medical and sacerdotal professions have, in reality, many features of resemblance—that either bring into action the same principles, hope and fear; and although the objects of these two passions are not the

* Coup d'œil sur les Révolutions et sur la Réforme de la Médecine.

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same in the hands of the priest, as in those of the physician, their efforts had, at that time, nearly the same degree of influence, in promoting the views of both. Medicine, like superstition, unquestionably exerts on the minds of men an influence proportional to their weakness; and, as the former acts upon more real and palpable objects than the latter, it follows, that the most rational and enlightened men can never altogether resist its power. Perhaps, no art penetrates more deeply into the human heart; no profession enables its members more easily to obtain possession of the most important domestic secrets; no species of doctrine (except that indeed which relates to the agency of invisible powers) affects so nearly all those fanciful ideas, in which the human mind, when it throws off the restraint of reality, is so apt to indulge; and certainly none furnishes means more independent of all political revolutions, to those who impose upon the credulity of the public, and cultivate it like a fruitful soil, with the utmost care and attention. With these impressions Cabanis contends that it was natural the priests should become physicians.

It is not a little singular that Boerhaave, who had acquired much distinction by his exposure of the errors of Spinosa, should owe to an implied acknowledgement of his talents the destination of his life. His intention of entering the church was abandoned, in consequence of a dispute which is reported to have taken place in a passage-boat during one of the journeys he undertook to prosecute his studies. A discussion was started upon the doctrine of Spinosa, and one of the passengers violently opposed it as subversive of all religion, and attacked the philosopher's mathematical demonstrations, evidently instigated by a blind zeal, whereupon Boerhaave coolly inquired of him, whether he had ever inspected the works of the author whom he so loudly abused? He was silenced by the question, and the discussion ceased; but Boerhaave's name was inquired, minuted down, and at Leyden he was maliciously denounced as a Spinosist. Dr. Johnson has remarked, that "such calumnies are not easily suppressed, when they are once become general;" and Boerhaave finding that they might probably operate against his success in the church, determined on devoting himself entirely to medicine.

In 1693, therefore, he took the degree of Doctor of Physic. His practice at first was very limited, and entirely disproportionate to his ability; but upon the death of Drelincourt, in 1701, by the interest of his friends, he commenced as a lecturer on the Institutes of Physic; and delivered on this occasion an inaugural discourse *Oratio de Commendando Studio Hippocratico;* holding forth Hippocrates as the model all students in medicine should adopt. The manner in which he illustrated his discourses by the

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application of his knowledge in chemistry induced his pupils, and in particular some English students at Leyden, to request that he would also teach Chemistry as he did Physic. His fame now began to extend itself, and in 1703, he was invited to a vacant chair of Medicine at the University of Groningen, which, however, he declined; and the curators of the Leyden University were so pleased at this conduct, that they issued a decree for an augmentation of his annual salary, and secured to him, when it should become vacant, the chief professorship in Medicine. About this time he appears to have first publicly contended for the use of mechanical reasoning in Physic; for in 1703 he delivered a discourse, entitled *Oratio de usu ratiocinii in Medicina.* Of the mechanical sect of physicians, he may be looked upon as one of the chief supporters; for the doctrines must be regarded to have sprung from Borelli, a native of Naples, born in 1608, and professor of Philosophy and Mathematics in the Universities of Florence and Pisa. Borelli's work, *De Motu Animalium,* gives an account of the functions of animals, which are explained agreeably to the laws of mechanics.

Nothing is more calculated to lessen the pride and confidence of the medical profession, than a view of the various systems and hypotheses which have, at different times, been ushered into the world, with all the pomp of demonstration, and the prognostication of a perpetual continuance. However ridiculous the flights of declamation indulged in by the speculatist and the theorist may be, we must not forget the dangerous consequences to which false theory and erroneous reasoning may lead in the practice of medicine: this is a matter of serious moment, and truly indeed, does Crabbe say—

> "Happy for man in every age and clime,
> If all the sons of vision dealt in rhyme."

No opinion has been too absurd to meet with its supporter—no fiction too outrageous to defy credulity. Passing over, for the present, the systems of Hippocrates and Galen, let me, in connexion more particularly with the subject of this memoir, allude to the physiologists of the seventeenth century, who ascribed all the phenomena of life to the operation of the laws which influence inanimate matter. These may be regarded either as the *Chemists,* or the *Mathematicians.* These sects divided the empire of Medicine for a considerable period: dreadful was the waste of ingenious speculation—useless was the application of often the most distinguished talent. A revolution of opinion, was however to be effected, and this, by the labours of a celebrated German, GEORGE ERNEST STAHL. He had been originally brought up in the school of the Chemists, who endeavoured to account for all the operations of the animal economy, by the chemical action of the components of the

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body upon each other; but he soon proved a deserter to the principles in which he had been educated; his genius enabling him to detect its errors and induce him to substitute a theory of his own. He saw the necessity of admitting the existence of a principle to oppose the physical powers of matter, and to this he gave the name of ANIMA, which he conceived to be of a specific nature, and to possess even a species of intelligence capable of acting the part of a rational agent, and superintending all the corporeal operations. Stahl has been accused of borrowing this notion from Van Helmont, whose ARCHÆUS certainly bears a strong affinity to the *Anima* of Stahl.* Dr. Bostock, however, thinks it should rather be referred to the doctrine of Hippocrates, with whose writings Stahl was conversant. He conjectured the existence of two opposite principles in the human body, one of which he states was constantly tending to corruption and decay, the other to life and health. The first he considered to be dependant on the elementary composition of the frame, the second on the power and energy of the mind. This untenable hypothesis was to be displaced, principally by the labours of Hoffman, who, more philosophically ascribed to the nervous system, the operations which Stahl had affixed to his *Anima*, and in this important step in physiological science, he led the way to a more reasonable system of physiology. Boerhaave was the contemporary of Stahl and Hoffman.

The discovery of the Circulation of the Blood by the immortal Harvey may be looked upon as having aided the introduction of mechanics into Medicine, the chief advocates of which were Borelli, Bellini, Pitcairn, Keil, and Boerhaave. The latter described the body as consisting of a conic inflected canal, which divided into lesser ones of the same description derived from the original trunk, and being ultimately collected into a retiform contexture mutually opening into each other, he conceived them to send off the lymphatics and the veins, the former of which terminated in various cavities of the body, and the latter in the heart itself. These tubes or canals he admitted to be for the conveyance of the animal fluids, on whose free and perfect action health was held to be dependant. *Obstruction*, therefore, in his view, formed the proximate cause of disease. To support this system, he drew from all the sources to which his learning gave him access; but so

* Arbuthnot, in a letter to Dean Swift, thus alludes to this matter:—"There is an excellent subject of ridicule from some of the German physicians, who set up a sensitive soul as a sort of a first minister to the rational. Helmont calls him Archæus, Dolæus calls him Microcosmetor. He has under him several other Genii, that reside in the particular parts of the body, particularly prince Cardimelech in the heart; Gasteronax in the stomach; and the plastick prince in the organs of generation."

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fallacious and so defective did it appear that it maintained an existence for a period but little beyond that of its founder.

The errors into which the mathematicians ran in their estimate of the powers of the various organs of the human body are calculated to excite astonishment not unmingled with contempt. The heart has been the chief organ upon which their speculations have been exercised. Borelli reckons the resistance which the heart has to overcome, in propelling the blood through the arteries and veins, as equal to 180,000lbs. weight; Dr. Hales deems it not greater than 51lbs.; and Keil brings it down to a single pound! Dr. Pitcairn supposed the form of muscles to be in a *compound ratio* of their length, breadth, and depth; that is, as they are *homogeneous solids* in the *ratio* of their weights. Whence knowing the force of any one muscle, we can, by the rule of proportion (from their weights), determine *that* of another. This he applies to the stomach, and by the computation of its muscular force, it is equal at least to 117,088lbs. weight. That muscles are in that proportion, is a mere *hypothesis*, for which the Doctor does not offer the smallest proof; and had he assigned 5 oz. as the weight of the stomach, he had been much nearer the truth. So with respect to the pressure of air overcome by respiration:—one makes it equal to 14,000lbs., whilst another reduces it to 100lbs., and many others to a still more insignificant amount. In short, all the mathematicians differ in their estimate; and to such a degree, as to manifest the extreme absurdity of the application of mechanical principles to the explanation of the vital phenomena. Physiologists have, in my opinion, generally erred in attributing too much to any one power, in accounting for the several actions of the animal economy. I am disposed to view all the operations carried on in the human system as wholly dependent neither on mechanical, chemical, or vital causes; but by a combined action of the three: and upon these considerations I think that we shall be better enabled to explain the variety of phenomena which present themselves upon an enquiry into their actions. We know that the mere size of the vessels, and the velocity with which the blood can be transmitted, are insufficient to account for the process of secretion: we know also that the agency of chemistry in forming various compounds, by different combinations of certain elements, is also inadequate to determine the nature of the process, and we have abundant instances on record, of animals having a defective nervous system, or monstrous beings, deficient of a brain or nervous system, which have lived several hours, and in whom various secretions have been known to have been produced and maintained. Although, however, we are unable to account for secretion by any one of these powers, we yet see that their existence and co-operation with each other is absolutely necessary to create it. In what way the several

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powers act, and the parts they perform in this important process, are subjects deserving the minutest attention, and of which to the present time we may be regarded as in ignorance. All we appear to know upon the subject seems to be that we have in the blood a peculiar fluid which contains the elements from which the various secretions, composing the constituents of the human body, can be eliminated—these secretions, however, are not to be detected, as existing in the blood, agreeably to Haller's idea; nor can we see clearly how they can be produced from it: we reasonably, therefore suppose, that partly by mechanical means, and partly by chemical relations, under the influence of the vital or nervous system, these changes are affected, and by which the secretions are formed, and substances identical with those composing the body are generated.

If the mechanical hypothesis is unable satisfactorily to account for the operations of the animal system in health, equally defective must it be to the explanation of the various diseases to which it is subject. These views are now exploded; and it is not necessary to pursue the matter further; but it will probably amuse some of my readers, who may not be aware of the extent to which these opinions were carried, to know that the same process of reasoning was applied even to the remedies proposed for the cure of disease. In the Philosophical Transactions (vols 24 & 26), there is actually a table constructed by Dr. Cockburn, in which are enumerated the different purgatives, emetics, &c., commonly employed, and in which the doses are severally adjusted by mathematical rules, and with mathematical precision, according to the age, the sex, and the constitution of the patient. The doses of the medicines are as the squares of the constitutions! Will it be believed that such a doctrine should have been seriously entertained in the 18th century? yet we find a writer (Dr. Balguy), in the "Edinburgh Medical Essays," patiently regarding the subject, and attempting to correct what he considered to be the errors in this table!! "You are to dose (says he) so much of the medicine as is spent on the stomach and intestines, directly as the constitution; and so much as is carried into the blood, as the square of the constitution, and the sum into the person's size is the quantity required."

But, to return to Dr. Boerhaave:—he explained, or rather endeavoured to explain, the functions of the body in health, the phenomena of disease, their causes, symptoms, and even the action of medicines for their relief, according to the laws of statics and hydraulics, and also by the operations of chemistry. Happily for mankind his practice was little in conformity to those views—an observation of nature, and an extensive experience, taught him the means of subduing disease, and enabled him to meet the exigencies which occur in

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practice. His aphorisms would be almost unintelligible but for the commentary of Van Swieten, and would long since have been consigned to the "tomb of all the Capulets." They are formed upon gratuitous suppositions, for which no proofs can be offered. They were the product of great reading and patient research; but they wanted the experience and judgment only to be obtained at the bed-side of the patient. Boerhaave altogether appears on the field of medicine rather as a lecturer or teacher than a practitioner: his comprehensive mind—his acute discrimination—his order and precision —his erudition—all combined to render him most popular as an instructor; and his renown must be considered as based upon the duties of his professorships at Leyden, rather than upon any particular practical acumen.

In 1709, Boerhaave succeeded Dr. Hotton as Professor of Medicine and Botany, and in his Inaugural Discourse *Oratio quâ repurgatæ Medicinæ facilis asseritur simplicitas*, he exposed the fallacies of the Alchemists and Metaphysicians, and endeavoured, notwithstanding his predeliction for the mechanical and chemical theories, to fix the science of medicine upon the basis of observation, experiment, and the inferences naturally deducible from such a method. His zeal manifested in the addition of plants connected with medicine, rendered it necessary to extend the Botanic Garden to twice its original dimensions; and such was the esteem felt for him and the admiration of his labours, that in 1714, he was placed at the head of the University, by receiving the appointment of Rector. In this year, he succeeded the celebrated Bidloo, as Professor of the Practice of Physic, and attended the University Hospital. At this period, Medicine and Surgery were regarded as one and indivisible, and Boerhaave was elected President of the Chirurgical College. In 1718, he succeeded Le Mort, as Professor of Chemistry, and gave an oration to prove that chemistry was capable of clearing itself from its own errors. This oration, *De Chemia suos Errores expurgante*, laid the foundation of his work on the Elements of Chemistry. In 1721, he delivered an elegant oration on the decease of Professor Bernard Albinus, the father of the celebrated Anatomist—*De Vita et Obitu Clarrissimi Bernhardi Albini;* and in 1725, he resigned the Rectorship of the University, and pronounced a Discourse on the Method of obtaining Certainty in Physics—*Oratio de comparando certo in Physicis.* This oration subjected him to some inconvenience; for having attacked the doctrine of Des Cartes, the Cartesians were incensed, and concluded that it was thereby intended to introduce Scepticism and Spinosism, and that the Church would be consequently endangered. The Governors of the University called upon Mr. Andala, of Franeker, who had put forth the charge, to retract the op-

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probrium—this was immediately done, and the means intended to defame the Professor, served only to increase his reputation.

In 1728, the Royal Academy of Sciences of Paris elected him into their body, in the room of the Count Marsigli, deceased; and in 1730, he received a like honour, by admission into the Royal Society of London.* In 1729, he was, for the third time, afflicted with gout and severe illness, which compelled him to resign the Professorships of Botany and Chemistry. This act gave rise to an elegant declamation, in which he recounted several particulars of his life. He had been, for a second time (in 1730), chosen Rector of the University; and this, in February 1731, he was obliged to relinquish, as he was no longer able to perform the duties of the office. He delivered on this occasion an oration, *De Honore Medici servitute.* Van Royen succeeded him as Professor in the Practical College of Physic, and also in Botany, and Gaubius in Chemistry and the Institutes of Medicine. In 1737, he was attacked with difficulty of breathing, and he described his disease, in a letter addressed to Baron Bassand, physician to the Grand Duke of Etruria, which I here subjoin, as it affords an example of the simplicity and clearness of his Latin Epistolary style, and also displays the piety of its author:—

"Me prehendit vomica in Pulmone, spiritum præfocans ad levissimos corporis motus, a tribus abhinc mensibus quotidie increscens. Si causa augetur, opprimet, si vero rumpitur eventus incertus. Quicquid fiet, id omne continget ex arbitrio superioris numinis. Cur ego metuam, quid cupiam aliud! Adoremus DEUM! sufficit. Interim curo sedulo ut lectissima ad hibeam remedia, ut leniam et maturem, securus de exitu. Vixi ultra 68 annos, semperque lætus."

He gave an account also of his case more in detail to Dr. Mortimer, Secretary of the Royal Society; and speaks of his immoderate fatness, promoted by his inability to take his accustomed exercise. He describes all the symptoms of hydrothorax, of which he died, on the 23rd September, 1738, being then nearly 70 years of age. The City of Leyden erected a handsome monument† to his memory, in the Church of St. Peter, with this inscription:

"SALUTIFERO BOERHAAVII GENIO SACRUM."

Boerhaave enjoyed a very extensive practice, being called to all ranks of

* It has been stated by Eloy, and also by the writers (Chaussier and Adelon) in the Biographie Universèlle, that Boerhaave was not earlier elected into the Royal Society through the envy of Dr. Freind, *the President.* To refute this calumny, it is sufficient to observe, that Freind never was President of the Royal Society, and that all Foreign Members are proposed to the Society by the President and Council.

† See the accompanying plate.

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Eruditissimo Medico.

J. Magra.

H Boerhaave.

Responsum meditatus dedi ad argumentum Literarium ex Hibernia per Te mihi missarum, quod Tibi commendo. Considerari quoque, quod ipse Scripsisti, & super eo ita sentio. Morbus ad infarctus Hypochondria pertinere videtur, visceribus Cholopoieticis scilicet obsessis arenarcosa, & facile progrediente, facit atrabiliarii humoris. Importunus vero agitatio acris materiae effecit, ut mota jam fusa canalesque rodat, & circumducto sanguini illata, turpes ubique maculas cuti infigat.

Prudenter potius mitificas, tarta movet, partitim submovet, per mollia acidula solventia, & antiseptica; in quibus sedulo perseverandum censeo: quare bibat aeger omni biborio dieti uncias binas fervidas de hoc medicamine, sicque pergat binis septimanis.

Vale! Leydae $17\frac{16}{1}33$.

℞. Sal. polych. dr. iii.
Tamarindor. unc. j ß.
Tart. vitriolat. dr. j ß.
Cum aq. decoct. gratio ℥ horae dode dein
agrumen. ℥ betonic. Chaerophylli ā m. j.
Colliciant iterum parum, dein decocti ℔ ij adunge
Rob Sambuci uncias ij.

H Boerhaave.

Facsimile by I.Harris.

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society. He was visited by all the distinguished persons who passed through Leyden; and the Czar Peter is reported to have lain all night in his pleasure barge, against Boerhaave's house, to have the advantage of two hours' conversation with him on various points of learning the next morning before college time. Students from all parts flocked to attend his lectures, so celebrated had he rendered the University. He married at the age of 42, and enjoyed domestic felicity. He left to his only-surviving daughter a fortune of two millions of florins. His library was sold by auction: it was rich in the best works of medical authors, and also in other departments of learning. He bequeathed his MSS., and in particular his Adversaria, or Commonplace Book, and his Anatomical and Chemical Preparations, to his nephews, Drs. Herman and Abraham Kaau. He has been falsely accused of being penurious; but he was liberal and benevolent; and it has been well observed by Dr. Burton, that "a man temperate by principle and inclination, and content without riches, as having no vices to indulge, would, after procuring them with great industry and integrity, use them with discretion." He used to say that "the poor were his best patients, because God was their paymaster."

Boerhaave's original destination for the church, and the course of study he had pursued, led him naturally to the contemplation of serious subjects. He was sincere and devout, and is a strong example to oppose to the aspersion *Religio Medici opprobrium Medicorum*, or the still stronger calumny, *Ubi tres Medici duo Athei*. Under very acute sufferings he exhibited great patience and submission. In his friendships he is described as sincere, constant, and affectionate; as a man, communicative without conceitedness, dispassionate in contending for truth, and averse from censure. No less meritorious was his conduct in the administration of justice in the course of his rectorship: no respect of persons could make him deviate from rectitude —no frowns of the great could awe him into compliance with any unworthy purpose—"he was modest without meanness, and steady without rudeness." In his manners he is reported to have been of great innocence and simplicity, entirely free from moroseness, which so frequently manifests itself in those who have conversed more with books than with men. He was not devoid of humour, and frequently enlivened his lectures by his facetiousness. He could converse in Latin, English, French, German, and Dutch. I have letters of his composition in Latin and in French; and it is remarkable that his signature is different according to the language to which it is appended.* He also read

* That affixed to the Latin is precise and formal, that to the French flourished and free. See accompanying *fac-simile*.

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Italian and Spanish. He lectured in Latin *extempore*, and the elegance of his discourses has been frequently alluded to by his pupils. He was very particular in the precise manner and performance of his several duties, and suffered nothing to interfere with their exercise.

Boerhaave had early accustomed himself to constant exercise; and, having naturally a robust frame and sound constitution, he became remarkable for strength. In stature he was tall; but he was disposed to be corpulent. He usually drank nothing but water. His head was large, his neck short, his complexion florid, and his hair was of a light brown, and curled. His countenance was open, and displayed his natural urbanity. There are many portraits of him extant, and they all have some points of similarity. Among the collection of drawings and engravings of the late Dr. Roy of Amsterdam, now in the possession of Mr. Diamond, there is an original chalk drawing of Boerhaave, by Luighi, an artist of great merit. I am happy to have had the opportunity of engraving this portrait of the Professor, which, as a work of art alone, is deserving of attention.

Boerhaave was a very early riser, and regularly devoted many hours to study. He was fond of music, and relieved himself from severer duties by playing on the violin, and singing also. He had a knowledge of music as a science, and had read the principal ancient and modern authors on the subject, as appears from the lectures he delivered on sound and hearing; and he had a concert once a week during the winter, at his residence. "Music is a sweet companion in every stage of life, but to the last it is peculiarly adapted. It furnishes employment without painful exertion, and while it charms the sense, soothes the heart."* Towards the latter part of his life he frequently retired to his country seat, and there regaled in an extensive garden, planted with many choice exotics and other treasures of the vegetable kingdom, and felt the truth of the observation of an excellent writer,† that "the greatest pleasure the mind is capable of in this life, is in the contemplation of God and nature; the sweet exercises of philosophy and reason." And these can be enjoyed only in retirement, and when free from the cares of business. Here Boerhaave relaxed from the active duties of his profession, and suffered not from dullness, for

"The spleen is seldom felt where Flora reigns."—COWPER.

His memory was remarkably retentive, a circumstance of great importance to him as a lecturer. He could quote not merely the authors on various topics; but even pages and sections from their works. He enriched his botanical discourses with references to the poets, Ovid, Virgil, and others.

* Knox. † Felltham.

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In the course of the preceding sketch I have mentioned several of the discourses delivered by Boerhaave before the University of which he was so great an ornament, and it now remains to particularize his other publications. Haller devotes a whole chapter, forming nearly a quarto volume, with an account of these; but he enumerates the different theses and disputations held before him during his rectorship, and the various Commentaries in all languages upon his writings. These it is not necessary to notice here, as they really belong to others, and not to Boerhaave; and many editions of his works there enumerated, must also be looked upon as spurious.

1. *Institutiones Medicæ. Lugd. Batav.* 1708, 8*vo*. Of this work many editions were published, and it has been translated into various languages, among others, by command of the Mufti into Arabic, and it formed one of the first works printed at the press erected by the Grand Vizir, at Constantinople. It formed one of the text books of Boerhaave, and it gives an account of the origin, progress, and success of Medicine, and of its several divisions. The Anatomical part is very defective. It has been commented upon, together with the Aphorisms, by Haller, Van Swieten, Gaubius, De Haen, &c.

2. *Aphorismi de Cognoscendis et Curandis Morbis. Lugd. Batav.* 1709, 8*vo*. Of this work also, a great number of editions, and in various languages, have been printed. It is also a text book of Boerhaave's Lectures, and it has been most ably commented upon by Van Swieten, who took his copy when a pupil, by a system of short hand, which he adapted to the Latin tongue; and by Haller, who published under the title of "Prælectiones Academicæ." Haller's copy was taken during his attendance on Boerhaave, in 1725-6-7, and he has added numerous notes, which it is scarcely necessary to say are valuable. There is an English translation of this work, by Dr. Delacoste, published in 1715. Boerhaave, in the preface, offers an apology for the conciseness of style, and probable obscurity; and he expressly states, that they were intended only for his own pupils, and to serve as the text of his annual lectures.

3. *Index Plantarum quæ in Horto Lugduno-Batavo reperiuntur. Lugd. Batav.* 1710, 8*vo*.

4. *Index Alter. Lugd. Batav.* 1720, 8*vo*. These were for the use of his pupils. In the latter he gives a history of the Physic Garden, and eulogizes the labours of his predecessors. Among the engraved figures of plants, are several not before published. The great Swedish Naturalist Linné, has admitted that Boerhaave had formed his *Genera Plantarum* in the most accurate manner, looking particularly to all the parts of

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fructification in the arrangement, and describing them with a precision such as to render the plates almost unnecessary for illustration. A surreptitious edition was printed in Holland; but stated to be at Rome, in 1727, in 2 vols., 12mo., a copy of which I have seen.

5. *Libellus de Materie Medica et Remediorum Formulis. Lugd. Batav.* 1719, 12*mo.* A London edition, of 1718, is usually placed in the list of Boerhaave's works; it is a surreptitious edition, and full of errors. This work was not designed for publication, and would not have appeared, but for the London copy, as it was only intended for his pupils. To the copies of the genuine work the bookseller, Severinus, has affixed his signature on the back of the title. It is arranged in sections, which have reference to the Aphorisms.

6. *Epistola ad Ruyschium Clarissimum pro sententiâ Malpighianâ de fabricâ glandularum in corpore humano. Amst.* 1722. Although Boerhaave was averse to controversy, he had no disinclination to enter the lists on the side of truth and justice; and in this epistle he maintains the doctrine of Malpighi, on the structure of the glands, against the Dutch Anatomist, for whose talents he entertained a very high respect.

7. *Atrocis nec descripti priùs morbi Historia, secundùm Medicinæ artis leges conscripta. Lugd. Bat.* 1724, 12*mo.*

8. *Atrocis rarissimique morbi Historia altera. Lugd. Batav.* 1728, 8*vo.* The first of these relates to a case of rupture of the Œsophagus, the other one an extraordinary enlargement of the heart.

9. *Elementa Chemiæ Lugd. Batav.* 1732, 4*to., 2 vols.* This is altogether an excellent work, and for the period in which it was produced, one of great value, surpassing all others then published. The historical part is very interesting, and the author has very happily shown the connexion of chemistry with mathematics and natural philosophy.

The above constitute all the works separately published by Boerhaave. He communicated three papers to the Royal Society, which are printed in Vols. 38 and 39 of the Philosophical Transactions. These are *De Mercurio Experimenta,* and relate to the transmutation of metals as put forth by Paracelsus, Helmont, Basil Valentine, and others, a doctrine which Boerhaave thought entitled to be considered as feasible. Impressed with this idea, he endeavoured to consummate the purification of quicksilver; and, to use the words of Dr. Burton, "although with a matchless perseverance he tortured it by conquassation, trituration, digestion, and by distillation, either alone, or amalgamated with lead, tin, or gold, repeating this operation to 511, and even to 877 distillations, what was the result? it

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appeared rather more bright and liquid, without any other variation in its form or virtues, and acquired very little, if any, increase of its specific gravity: indeed, by constant and violent agitation for months together, it would exhibit a *black*, and preserved so long in certain degrees of heat precipitate a *red*, powder; but both these powders, by greater degrees of heat, were convertible into the self-same quicksilver, from which they were by those means prepared." The faithful relation of these experiments, and the communication of them to the Royal Society of London and the Academy of Sciences of Paris, place Boerhaave's character for honesty and integrity in a high point of view. He once contemplated giving a chronological history of the Alchemists, intending thereby to shew that from Geber to Stahl, they had all been misled by one and the same error. He had taken great pains on this subject, and the non-completion of his labour is a loss to the history of science; for he had read over most diligently the works of Paracelsus four times, and those of Helmont seven times.

Many portions of his Lectures have been published by his pupils, and MS. copies are to be found in most public libraries. These, I do not think it necessary to notice here, but I shall enumerate the several works he assisted to publish:—

1. *Bart. Eustachii Opuscula Anatomica, Lugd. Bat.*, 1707, 8*vo*. The original of this work appeared at Venice in 1564. In the Leyden edition Boerhaave laments the loss of the plates of this author, and this hint is said to have led to their restoration and publication in 1714.
2. *Prosper Alpinus de Præsagienda Vita et Morte Ægrotantium cum præfat. H. Boerhaave, Lugd. Batav.*, 1710, 4*to*.
3. *P. Alpinus Historiæ Naturalis Ægypti. Pars 2^da^ sive de Plantis Ægypti, Lugd. Batav*, 1735, 4*to*. This was a posthumous work of the author, and Boerhaave materially contributed towards its publication.
4. *C. Pisonis, Selectæ Observationes et Consilia, Lugd. Batav*, 1718, 4*to*.
5. *N. Piso De cognoscendis et curandis Morbis, Ludg. Batav.* 1733, 4*to*.
6. *Marsigli, Histoire Physique de la Mer. Amst.*, 1725, *folio*. Boerhaave was the successor of the Court Marsigli, in the Royal Academy of Sciences of Paris.
7. *Vesalii (A.) Opera Anatomica et Chirurgica cura H. Boerhaave et B. S. Albini, Lugd. Bat.*, 1725, *folio, 2 vols*. The Preface, embracing the life of the author of the work is jointly attributed to Boerhaave and Albinus.

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Many are of opinion, from the style in which it is written, that it belongs wholly to the latter. Boerhaave must, however, be considered as having assisted in the undertaking, as his name is associated with that of the celebrated anatomist.

8. *Vaillant, Botanicon Parisiense, ou Demonstrations des Plantes des Environs de Paris. Leyde.* 1727, *folio.* When this celebrated Botanist was upon his death-bed, the only point which gave him concern was being prevented completing his favourite work, the labour of thirty-six years. He wrote to Boerhaave in May, 1721, and entreated him to undertake its publication. This was also urged upon him by Consul Sherard, to whom Boerhaave was exceedingly attached; and he accordingly purchased, at his own expense, the beautiful plates giving 300 figures, which the engraver had not been paid for by the author.

9. *Car. Drelincurtii Opuscula Medica, Hag-Com.* 1727, 4*to.* Boerhaave was the successor of Drelincourt, in the Chair of Medicine, at the Leyden University.

10. *Laur. Bellinus de Urinis, Pulsibus, Febribus, &c. Lugd. Bat.*, 1730, 4*to.* One of the chief physicians of the Mechanical Sect.

11. *Aretæus de Causis, Signis, et Curatione Morb. Acut. &c. Gr. et Lat. c̃ Comment. Pet. Petiti et Notis J. Wiggani, et Obs. D. W. Trilleri, curante H. Boerhaave, Lugd. Bat.*, 1735, *folio.* Boerhaave united with Dr. Groenvelt to give a complete edition of all the Greek Physicians, except Hippocrates and Galen (already done by Charterus); but his health and numerous pursuits compelled him to give up the task. Aretæus is the only author printed; but portions of Ætius and Nicander had been prepared.

12. *Aphrodisiacus, sive de Lue Venerea. Lugd. Batav.* 1728, *folio, 2 vols.* This work had appeared at Venice in 1566 and 1567, and Aloysius Luisinus reprinted it in 1599 in 2 vols., folio. Boerhaave added a Preface which has been much esteemed, and even separately published at London and Paris.

13. *Swammerdami (J.) Historia Insectorum, sive Biblia Naturæ. Lugd. Bat.* 1737, *folio.* But for the labours of Boerhaave, this work would probably never have appeared. A life of the author is prefixed. The work is printed in two volumes, in Latin and in Dutch, the Latin translation was made by Gaubius.

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JOHN BOSTOCK, M.D. F.R.S.

&c. &c. &c.

" His morning study and his midnight oil."
CRABBE.

JOHN BOSTOCK was born in Liverpool, in the year 1773. He was the only child of Dr. John Bostock, of that place, who, after passing through his education with great credit, and entering upon the practice of his profession with the brightest prospects, was cut off by an acute disease in 1774, in the thirtieth year of his age. He graduated at Edinburgh, in 1769, and printed his thesis *De Arthritide*, dedicating it to Dr. Cullen, with whom he was a favourite pupil.* He travelled on the continent, took an honorary degree at Leyden, and settled in his native town, in the year 1770. He married, in 1771, the daughter of John Ashton, Esq., an enterprising merchant of Liverpool, who is worthy of notice as having projected and executed the first navigable canal in this island.†

Early in life, the subject of the present memoir determined to devote himself to his father's profession; but the first circumstance which may be

* " Dr. John Bostock, father of the present distinguished physiologist, whose premature death disappointed the sanguine hopes which Dr. Cullen and his other friends had been led to form of his maturer exertions in the promotion of medical science, from the early manifestation of his talents, and the assiduity with which he cultivated them." Dr. Thomson's Life of Dr. Cullen, p. 461.

† This was the Sankey Canal, of which Pennant, in his Tour from Downing to Alston-moor, says, that it was formed in consequence of an act passed in 1755, empowering certain undertakers to make the *Sankey* stream navigable. It is the most ancient canal in our island that runs distinct from the natural beds of other rivers, since the revival of these great works; for we must not forget the *Roman foss-dyke*, and the opening of it again in the time of Henry II.

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considered as having given him a taste for any branch of science connected with medicine, was his attending a course of chemical lectures, which were delivered by Dr. Priestley in the New College of Hackney, in the year 1792. Dr. Bostock commenced the study of medicine in his twentieth year, first, by spending some time with an apothecary, in order to become familiar with pharmacy; and afterwards, by attending the practice of the Liverpool General Dispensary, to which was attached the care of the parish paupers, rendering it, perhaps, the most extensive charity of that kind in this country.

In the autumn of 1794, in his twenty-second year, he went to Edinburgh, where he had his taste for chemistry farther fostered by attending the lectures of Dr. Black, and where he commenced the study of anatomy under Monro *secundus*. The winter of 1795-6 he spent in London, devoting his time almost entirely to anatomy, in the dissecting room of Dr. Andrew Marshal, the best teacher of anatomy in his day. He returned to Edinburgh in the autumn of 1796, and, excepting a short interval of about three months, remained there until he graduated in June 1798. His *thesis* on this occasion was upon *secretion*, in which he defended the chemical hypothesis, and it contained some experiments on the formation of artificial bile. It was dedicated to his late friend and fellow-townsman, the amiable and enlightened William Roscoe. During the last two winters of his residence at Edinburgh, he attended the lectures of Mr. Allen on physiology, and thus laid the foundation of his attachment to that science which unveils the mechanism of life. He also improved his knowledge of chemistry by attending the lectures of Dr. Hope. On his first going to Edinburgh, he became a member of the Medical Society, and, in the year 1797, was elected one of its presidents. During his residence there he had the good fortune to form an intimate acquaintance with some individuals, who have since acquired great celebrity; among whom I may particularise Dr. Thomas Young, Dr. Marcet, Professor De la Rive, and Dr. Roget, the latter being now the only survivor.

On leaving Edinburgh, Dr. Bostock settled in his native town, and was shortly afterwards elected one of the physicians to the General Dispensary. While holding this situation he took an active part, in conjunction with the late Dr. Currie, in the planning and establishing of the Fever Hospital of that town. About this time he paid considerable attention to the study of botany; and, in conjunction with Mr. Roscoe and Dr. Rutter, projected the Botanic Garden. He also assisted in the formation of the Royal Philosophical and Literary Institution, and delivered the first course of lectures, the subject being physiology. About this time he began to exercise his

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pen in writing for the various medical and scientific journals. For several years he wrote nearly all the medical and scientific articles in the Monthly Review, various articles in the Annual Review, and other literary and scientific journals. He contributed papers, principally on animal chemistry, to the Edinburgh Medical Journal, and to the Transactions of the Medico-Chirurgical Society of London; and papers more strictly chemical to Nicholson's Journal, and other similar works. He now determined to devote his attention more particularly to the study of physiology; and, after preparing himself by diligently reading through, and making a detailed abstract of Haller's great work, *Elementa Physiologiæ Corporis Humani*, he published an *Essay on Respiration*. At this time Sir David Brewster requested him to contribute to his Encyclopædia, in which he wrote the articles *Albino, Galvanism, Heat, Animal Magnetism, Materia Medica, Medicine, and Physiology*. Of these, the article Galvanism was separately published, in 1818, with some additions.

In the year 1817 he gave up the practice of the medical profession, and removed from Liverpool to London. In making this change, he was principally influenced by the greater facilities which the metropolis afforded for the prosecution of his favourite pursuits, and for the enjoyment of the society of his scientific friends. To those already mentioned, he was now able to add the illustrious names of Davy and Wollaston. Shortly after his settling in London, upon the removal of Dr. Thomson to Glasgow, he edited for two years, in conjunction with Mr. Aikin, "The Annals of Philosophy." He also succeeded his friend, Dr. Marcet, as one of the lecturers on chemistry, at Guy's Hospital; an office he held for several years.

For a considerable time he had been making preparation for a general work on physiology, and, in the year 1823, he published the first volume of his *Elementary System;* the second appeared in the year 1826, and the third in the year 1827. At the request of Dr. Bright he entered upon a series of experiments, the results of which were published in his "Medical Reports."* Dr. Bostock is the first person to have discovered the presence of urea in the blood of persons labouring under certain diseases of the kidney. Having completed his work on physiology, he projected a new translation of "Pliny's Natural History," to be accompanied with notes; and in 1828 he printed, for private distribution, a specimen of the work, consisting of the first and thirty-third books; he has since, at different periods, devoted a considerable portion of his time to the prosecution of this

* Vol. I. p. 75, where a minute chemical analysis of the properties of urine in various cases is to be found.

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work, and it is to be hoped that, at no very distant period, he will give to the public the fruits of his labours in this interesting field of science.

In the year 1828, he was applied to by the Commissioners appointed by parliament to inquire into the state of the supply of water in the metropolis,* to analyze various specimens of water from different parts of the river Thames; and he has, since that time, been frequently applied to, to make the analysis of various specimens of water, by public companies, or by individuals. In the spring of 1830, he spent some time in Paris, chiefly for the purpose of the education of his children; and returned to London in 1831, after an absence of about eighteen months, when he resumed his former occupations. A *second* edition of his *Elementary System of Physiology* was called for, to which he made some additions and corrections. He afterwards wrote, for the Cyclopædia of Practical Medicine, the articles Pulse, Morbid States of Urine, and a Sketch of the History of Medicine; the latter was afterwards printed in a separate volume. He was next engaged in preparing a *third* edition of his Physiology, which appeared in 1836, with still further additions. For the Cyclopædia of Anatomy and Physiology, he wrote the articles Absorption, Albino, and Digestion. Since his residence in London, he has been associated with most of the scientific societies of the metropolis, and taken an active part in the management of some of them. For some years he was one of the secretaries of the Geological Society; and, in the year 1826, he was elected president. He has been several times on the council of the Royal Society; and, in 1832, he was nominated one of the vice-presidents. For some years he held the office of Treasurer of the Medico-Chirurgical Society, and has been on the council of the Linnæan, Zoological, and Horticultural Societies, and of the Royal Society of Literature. For some years he has also been on the Committee of the Fever Hospital, and has taken an active share in its management.

Such is a brief sketch of the course of Dr. Bostock's professional and literary life. It remains to give a short notice of the several works and papers that have been written and published by him.

1. His *Thesis De Secretione*, published at Edinburgh, in 1798, has already been noticed.

2. *Essay on Respiration, Parts I. and II. Liverpool*, 1804. 8*vo.*

Dr. Bostock's attachment to chemical science naturally led him to examine the phenomena of Respiration. No part of physiology can present a subject of greater interest to the medical philosopher; and the researches

* See Report, ordered to be printed 21st April, 1828.

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of modern times may be said to have illustrated it generally in a very satisfactory manner. During the course of Dr. B.'s attendance upon the Fever Wards of the Institution at Liverpool, he had been frequently led to notice the rapid changes of temperature which the body experiences in this disease, and he felt desirous to ascertain how far they could be reconciled to the modern doctrines of animal heat. For this purpose he entered upon a course of experiments, respecting the chemical state of the respiration in fever; and he afterwards determined to extend his inquiries to other states of the body, either natural or morbid, in which it might be supposed that this function would be affected. Our opinions relative to animal heat have undergone so great a change since the experiments made by Sir Benjamin Brodie, and recorded in the Philosophical Transactions, and especially noticed in the memoir I have given of this distinguished surgeon and physiologist—experiments which have been made since the publication of Dr. Bostock's work—that it is unnecessary to enter upon a review of the subject in this place; but I may notice that Dr. B.'s work gives to the reader a very clear sketch of the state of physiological science, in regard to respiration, as far as the labours of the chemist had assisted to develope the function up to the time at which he wrote, and the continued history relating to it in every point of view, may be found in his Elementary System of Physiology.

3. *Remarks on the Reform of the Pharmaceutical Nomenclature; and particularly on that adopted by the Edinburgh College. Liverpool,* 1807. 8vo.

These "Remarks" were read before the Liverpool Medical Society. Dr. Bostock bestows deserved commendation on the improved Chemical Nomenclature of the French; but he thinks it inapplicable to medicine. He holds the alteration of pharmaceutical terms to be not merely unnecessary, but even injurious. In practice it is possible that some inconvenience may arise from an alteration of the names of substances employed in medicine; yet these are certainly more than counterbalanced by having the nomenclature regulated according to the nature of the composition expressed. *Red Precipitate,* for example, is a very familiar term; but it is very vague and indefinite. *Oxidum Hydrargyri rubrum per acidum nitricum,* notwithstanding its length (and I select it as an extreme illustration), designates its nature completely. The language of pharmacy must be regulated by the progress of chemical and botanical science; it cannot be stationary.

4. *Remarks on the Nomenclature of the New London Pharmacopœia. London,* 1810. 8vo. These were also read before the Liverpool Medical

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Society. The attempt on the part of the Members of the London, Dr. Bostock regards as not more fortunate than that of the Edinburgh, College.

5. *An Account of the History and Present State of Galvanism. London,* 1818. 8*vo.* This was originally published in the tenth volume of Dr. Brewster's Encyclopædia. Some additions were made to it in its separate form. It contains a history of the science, and an attempt to establish the chemical, in opposition to what has been termed the electric, hypothesis.

6. *An Elementary System of Physiology. London,* 1823-6-7. *Second edition,* 1828-30. *Third edition,* 1836. 8*vo.*, 3 *vols.* Until the appearance of Dr. Bostock's work, it may be said that no systematic and connected view of modern physiology had been put forth in this country. Such a work, and executed with the care and precision which characterizes Dr. B.'s productions, is of great value to the medical student, for it embraces within a reasonable compass, a complete view of the progress and state of the science, reviews the various hypotheses and theories that have been proposed and sanctioned by the approval of the highest authorities. The perspicuity with which Dr. B. has displayed the whole of his subjects, is entitled to the highest commendation; and the references to the authorities whence the statements are derived are given, to enable the more advanced student, or experienced practitioner, to consult the originals for further and more minute examination.

Physiology, in its original meaning, is equivalent to Natural Philosophy; but custom has reconciled us to the limited use of the term, and it implies a knowledge of powers, and the manner by which the various functions of the body are exercised. A knowledge of the parts, however intimate, without a corresponding acquaintance with the uses to which those parts are destined, would be of little importance or value; and, upon this knowledge, all rational systems of Physiology must be founded. To remedy the disorders and accidents to which the frame is exposed, is the end and object of physiological researches. Providence has wisely ordered the developement of natural knowledge to be equally progressive with the wants of Man; and means of cure have been ascertained, partly by the aid of practical experience and observation, but chiefly through the information acquired of Anatomy and Physiology. It is not a little remarkable that an examination into the several functions of the body, as a distinct object of investigation, should not have been made prior to the commencement of the preceding century. The physiological speculations of the earlier physicians, are in no systematic form, and abound with absurdities and extravagances. The writings of Hippocrates, the Father of Physic, are deeply imbued with the prevailing

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philosophy of his day—he adopted the mysterious opinions of Pythagoras respecting the occult power of particular members, and he believed in Siderial influence over the operations of the Animal Economy. Aristotle made considerable advances, by his researches into Comparative Anatomy and Natural History—he enjoyed peculiar facilities for this pursuit, and the energies of his mind were directed to this object. Next to Aristotle (and what a long interval is here presented) succeeded Galen. By a more minute acquaintance with Anatomy than any of his predecessors, he is distinguished from all his contemporaries.

The chemical and the mechanical philosophers divided the opinions of the learned of the age, until Stahl appeared. He seems to have directed the powerful energies of his mind to a consideration of the vital principle, and its effects upon matter. To this principle he gave the name of *Anima*, and he appears to have endowed it with a species of intelligence, making it to act the part of a rational agent, and superintending all our corporeal operations. The agency of chemistry and mechanics were shown to be inadequate to account for the functions of the animal frame; and although the anima of Stahl was hypothetical, and too much involved in metaphysical speculation to be satisfactory, yet attention was directed to the phenomena immediately connected with life, and juster notions proportionably obtained of the laws by which they were produced or regulated. The celebrated Hoffmann seems to have chiefly directed his attention to the nervous system, and to have attached a due importance to its influence on the vital functions. Physiology has, perhaps, received greater lights from the labours of Haller, than of any other writer. He has been stiled the Father of Modern Physiology—an appellation to which, indeed, he is fully entitled. Hypothesis he rejected; observation and experiment he substituted in its place; and the result has been to fix the study upon its only true and proper basis. In modern times physiology has made great advances. The names of Hunter and Bichat will be ever memorable in the annals of physiological science. It would not be possible to give an analysis of Dr. Bostock's work—it is professedly elementary—it is a text book to which the student must refer.

The contributions of Dr. B. to the Cyclopædia of Practical Medicine are—

1. (Vol. III. p. 561.) *Pulse.* This subject, which, in the memoir of Dr. Heberden, I have already treated at some length, is divided by Dr. B. under three heads—*historical, physiological,* and *pathological.* In the first, he treats of the history of the opinions that have been entertained respecting the pulse; in the second, on its physiology; and in the third, on its pathology or morbid conditions. In the latter division he endeavours to show

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how far we may be able to judge of the seat and nature of disease, so as to assist us in forming our diagnosis and prognosis, and in directing the practice that should be employed. Dr. Bostock thinks that Heberden and Falconer have attempted to simplify the subject too far; and that in endeavouring to discard a mass of erroneous notions, they have fallen into the opposite extreme. Of the facts and observations adduced by those enlightened physicians, and the authority deservedly attached to them, he entertains the highest opinion and respect.

2. (Vol. IV. p. 359.) *Morbid States of the Urine.* The urine is the most compound of all the animal secretions, and, at the same time, the most variable in its contents. This necessarily arises from the office to be performed by the kidney. The ancients directed much attention to the examination of the urine; but no satisfactory results were obtained, until the advances in modern chemistry directed the especial notice of the pathologist to a consideration of the composition of the animal secretions. Dr. B. first treats of the properties of healthy urine, the quantity usually secreted, and the analysis given by Henry and Berzelius, of its variable composition. The former enumerates no less than twenty-one different substances entering into its formation. Dr. B. arranges the morbid states of the urine under seven species—the aqueous, the sub-aqueous, the lithic, the phosphatic, the purpuric, the albuminous, the sacharine; and he adds an eighth to embrace all those various miscellaneous or incidental circumstances connected with the constitution of the urine, and which are not easily capable of being reduced to any assignable or recognised species. I shall not here enter into any illustrations of the different species marked out by Dr. B., but I may observe, in reference to the *albuminous*, that the analysis he has made of this kind, was at the request of Dr. Bright, and in illustration of his important researches relative to this condition of the urinary secretion.

3. *The History of Medicine* is prefixed to the Cyclopædia. *L'histoire de la Médecine doit être pour le Praticien ce que l'histoire générale est pour l'homme d'Etat.* A history of medicine ought, indeed, to be to the medical practitioner what history in general is to the statesman; for, as in the one case, from the contemplation of the revolutions of empires, and the fall of nations, the art of governing man is attained, so in the other, from reflection upon the various changes experienced in medicine, its professors will learn how small are the number of truths that have been established, and how few systems have survived beyond the period of the existence of their authors. Examination of these will necessary lead to the greatest

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advantages; for it will be seen that few points, however well displayed or intrinsically important, have been received without long, violent, and tedious persecution. To compose an instructive history of medicine, is a task which requires great application, extensive reading, and the most cautious discrimination. To render it useful to science, the course of the various discoveries must be traced—the difficulties that have been surmounted must be displayed—the effects of theory in the fixing of errors distinctly marked, and the influence which these have exerted on the practice of the art, defined. From a long and arduous course of reading and study, Dr. Bostock has shown himself well qualified to write a true history of medicine; but the present essay can only be regarded as a sketch. It is sufficient to say of it, that it is worthy of his pen. He reviews, with great ability, the progress of practical medicine, the obstacles it had to encounter, the manner in which these have been overcome, and its present state of improvement, which our author is not disposed to underrate; but with the view of more effectually attaining greater advancement, he strenuously urges that we should attend to a more careful exposition of facts, and to a more cautious generalization of them.

Dr. B.'s papers, in the Cyclopædia of Anatomy and Physiology, are—

1. (Vol. I. p. 20.) *Absorption.* The author treats, first, of the organs by which the function is performed; second, of the subject of venous absorption; and third, of the manner in which the absorbents act. He then considers the specific uses of the different parts of the absorbent system, and the relation it bears to the other vital functions.

2. (Vol. I. p. 83.) *Albino.* On this curious variety of the human species, his information is very full; but he comes to the conclusion that "although the anatomical or physical cause of the peculiarity is ascertained, yet that we are ignorant of its remote cause, or of that train of circumstances which leads to its production.

3. (Vol. 2, p. 6.) *Digestion.* Dr. B. describes the organs of digestion in various animals, gives an account of the nature of the substances usually employed as food, and also of the changes which the food experiences in the process of digestion. He then treats of the theory of digestion, and the peculiar affections of the digestive organs, embracing the topics of hunger, thirst, nausea, and the relation these bear to the animal economy in general.

In the Philosophical Transactions for 1829 (p. 287,) is printed a paper by Dr. Bostock, *On the Spontaneous Purification of Thames Water.* The

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process of depuration which spontaneously commenced, continued for about eight weeks, when that which had been in a state of extreme impurity, opaque with filth, and exhaling a highly fœtid odour, became perfectly transparent, without any unpleasant odour, but retaining its original dingy colour. Minute examination of the fluid showed that it had freed itself from the large quantity of organic matter it had contained—that it had acquired a state of purity, which rendered it fit for many purposes—yet it had obtained a great increase of the quantity of saline matter. This increase was four-fold, and the greatest was found to be in the muriates which were very nearly twelve times more in the purified, than in the ordinary Thames Water.

The 47th volume of the Transactions of the Society of Arts contains *Observations on Writing Ink*, by Dr. Bostock. This is an interesting communication on the chemical constitution of ink, the causes of its deterioration, &c. The Author gives an account of the means of making the best ink; and recommends a strong decoction of coffee, as the best material to dilute it, as it does not occasion decomposition of the ink, but, on the contrary, improves its colour and adds to its lustre.

The Edinburgh Medical Journal contains nine papers by Dr. Bostock:

1, 2. (Vol I. p. 257.) *Essay on the Analysis of Animal Fluids, principally with the view of ascertaining their definite characters.* Dr. Bostock is to be regarded and respected, as one of the earliest labourers in the field of animal chemistry. How vague the employment of the terms serous, mucilaginous, gelatinous, &c., until very recent times, even by able medical and physiological writers. Dr. B. endeavours to ascertain a definite character for what he calls the *Primary Animal Fluids*, which consist of substances usually seen in a state of solution; those into which the compound fluids existing in the animal body are capable of being resolved by the application of different re-agents, without occasioning a decomposition of them into their ultimate elements. A *second* essay on this subject is printed in Vol. II. p. 37.

3. (Vol II. p. 14.) *Analysis of a Stearoid Tumour.* The substance here submitted to examination, proved to be essentially different from fat, in its chemical properties, though forming what is usually called a fatty tumour. Dr. B. says "it differs from every other animal substance which has hitherto been submitted to chemical analysis. It neither resembles fat, cellular substance, the muscular fibre, medullary matter, jelly, nor adipocire."

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4. (Vol. IV. p. 159.) *Remarks on Mr. Ellis's Theory of Respiration.* In this paper Dr. B. supports the views maintained by him in his Essay on this function.

5. (Vol. V. p. 14.) *Experiments, showing that a Mineral Poison may produce sudden and violent Death, and yet be incapable of detection in the contents of the Stomach.* These were made to aid the ends of justice at a trial of a case of poisoning, which took place at Lancaster. To a dog, four grains of the oxymuriate of mercury were given, and death occurred after a few hours. The contents of the stomach were subjected to analysis, and the poison could not be detected, though the tests employed were capable of rendering it sensible in a fluid, when it composed only a three-millionth of its weight. This proves that an animal may be suddenly killed by receiving a metallic poison into the stomach, and yet that the nicest tests may not be able to detect any portion of the poison, after death, in the contents of the stomach.

6. (Vol. V. p. 166.) *Observations on the Different Methods recommended for detecting minute portions of Arsenic.* In a forensic point of view, this enquiry is obviously of the first importance. It not unfrequently falls to the lot of those who are inexperienced as to chemical manipulations to give opinions which may affect the life of a fellow-creature; and Dr. Bostock's principal object in this paper is, to describe the processes by which the presence of the mineral poison may be detected in so minute a manner, that a person who had never before seen them performed, or who was not in the habit of experimenting, may be able to judge of the appearances presented to him. To effect this, he describes the various means adopted by different chemists, and the results obtained by the employment of the usual tests. The most satisfactory test, in the opinion of Dr. B., is the sulphate of copper, which throws down a green precipitate—it is an exceedingly delicate test, and will operate upon a very minute quantity.

7. (Vol. VII. p. 274.) *Analysis of the Cactus Coccinillifer.* Dr. Anderson, of Madras, introduced this plant from the gardens at Kew, into the Botanic Garden at Madras, with the view of cultivating there the cochineal insect. From experiments which were made upon many men labouring under the sea-scurvy, it was ascertained to be a powerful anti-scorbutic; and a suggestion having been made as to the probable presence of citric acid, Dr. B. made some experiments to ascertain this point. He could not, however, detect the presence either of citric or tartaric acid; and he was induced to consider the power and properties of the cactus not to depend

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upon any acid it contains. A substance similar to the mucilage of linseed he found to enter largely into the composition of the plant.

8. (Vol. XXIII. p. 65.) *Experiments to ascertain how far the presence of Albumen and Muriatic Acid interfere with Action of Bichloride of Mercury, and Protomuriate of Tin upon each other.* This paper bears reference to No. 5, in which it appears that Dr. B. had been unable to detect the presence of corrosive sublimate in the contents of the stomach of a dog, to whom it had been administered, and to whom it proved fatal in a few hours. It was suggested that the stomach itself should be submitted to analysis. The discovery of the presence of muriatic acid in the digestive organs by Dr. Prout also rendered further examination necessary. Dr. B. began by ascertaining the degree of delicacy with which the bichloride of mercury could be detected by the protomuriate of tin, and how far the presence of albumen would interfere with the action of the salts of mercury, and of tin upon each other. He found that a twenty-thousandth of a grain of bichloride of mercury, dissolved in a hundred grains of water can be detected by one drop of the protomuriate of tin; but that if a one-hundredth of a grain of albumen be previously added to the water, we can detect only a ten-thousandth of its weight of the bichloride. He also ascertained that when the albumen, in a coagulated state, has been combined with the bichloride of mercury, the bichloride may be detected by the protomuriate of tin, when applied to the albumen itself, but that the bichloride cannot be separated from it by digestion in water. The mercury might therefore be detected by examination of the stomach itself. Dr. B. also found that the presence of free muriatic acid does not prevent the detection of bichloride of mercury when albumen is present, but apppears even to render it more apparent, by promoting the coagulation of the albumen.

9. (Vol. XXXI. p. 114.) *Observations on the Coagulation of the Blood.* Having ascertained, by various experiments, that the quantity of fibrin in healthy blood is much less than is generally supposed to be the case, and that its proportion is extremely variable in different specimens of what may be regarded as healthy blood, Dr. B. turned his attention more particularly to the effect of strong agitation of the blood preventing its coagulation—an opinion very generally entertained. He, on the contrary, believes that this process merely breaks down the coagulum, and divides the fibrin into fragments, which, from their minuteness, and the small proportion in which they exist, had previously escaped detection.

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JOHN BOSTOCK, M.D., F.R.S.

To Nicholson's Journal of Natural Philosophy, Chemistry, and the Arts, Dr. Bostock furnished the following sixteen papers:

1. (Vol. II. p. 296.) *Outline of the History of Galvanism: with a Theory of the Action of the Galvanic Apparatus.* This paper was written in 1802, when the numerous discoveries made by the employment of this agent began to assume a consequence, and to be entitled to an historical form. Dr. B. commenced an arrangement of this kind, which in future papers he continued and improved. Galvani's first publication, it will be recollected, appeared in 1791; Volta's, on Animal Electricity, in 1793.

2. (Vol. III. p. 69.) *On the Theory of Galvanism.* This may be looked upon as a continuation of the preceding paper. The author herein contends for the perfect identity of the galvanic with the electric fluid. He considers the galvanic pile as a *generating*, and the electric machine as a *collecting*, apparatus.

3. Vol. III. p. 288.) *On the Unexpected Production of Sulphate of Magnesia.* This appeared upon some stone walks which were lined with bricks, formed of clay, procured from the foundation, and was visible a few months after the erection of the building. The salt was in remarkable purity, and not to be found in the clay of the bricks. Dr. B. suggests that it is possible that muriatic acid may have been dissipated during the burning of the bricks, and the sulphuric generated by the union of oxygen with some sulphureous matter existing in the coals.

4. (Vol. IV. p. 129.) *Comparative Experiments and Observations on Myrtle Wax, Bees Wax, Spermaceti, Adipocire, and the Crystalline Matter of Biliary Calculi.* The myrtle wax he deduces, from a variety of experiments, to be an oxigenated fixed oil; but it resembles the wax of the bee, and also spermaceti, and the adipocire produced by nitric acid upon muscular fibre, and the crystalline matter of biliary calculi.

5. (Vol. VI. p. 109.) *Further Experiments and Observations on the Efflorescence of Walls.* A continuation of the paper No. 3. He found, upon examination of the efflorescence on different walls, a variety in their nature: sulphate of magnesia, sulphate of soda with indication of muriatic acid, sulphate of soda nearly pure, and carbonate of soda—the latter upon the stucco of a sea-water bath.

6. (Vol. XI. p. 75.) *Experiments on the Analysis of Goulard's Extract, or the Aqua Lithargyri Acetati.* This extract, which has formed so useful a preparation in the hands of the surgeon, coagulates mucilage more than acetate of lead, and is, therefore, a better test of the presence of mucus.

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7. (Vol. XI. p. 244.) *Observations and Experiments for the purpose of ascertaining the Definite Characters of the Primary Animal Fluids, and to indicate their Presence for accurate Chemical Tests.* In this paper the author shows the great want of precision in the animal analysis, particularly of fluids, and enters upon an examination of the definite characters by which the primary animal fluids are distinguished. Albumen, jelly, and mucus are closely investigated. The former is well determined by its coagulation by heat. This property is not destroyed by dilution with 1000 times its weight of water; jelly is liquefiable by heat, and becomes concrete by cold; animal mucus or mucilage was a loose term, until Mr. Hatchett particularized it in his papers in the Philosophical Transactions for 1800. He looks upon jelly and mucus as not essentially different from each other, but only modifications of the same substance: when it is soluble in cold water, and cannot be brought to the gelatinous state, he calls it mucus. Dr. Bostock questions the propriety of this opinion. Albumen, he admits to be known by its coagulability and precipitation by oxymuriate of mercury; jelly, by its concretion on cooling, and its precipitation by tan; mucus, he says, is negative as to the preceding characters, but precipitated by *Aq. Litharg. Acet.* Animal mucus, he adds, has a great resemblance to vegetable gum, both in its mechanical and chemical qualities.

8. (Vol. XIII. p. 373.) *On the Saline Efflorescences upon Walls; Salivary Concretions; Deflagration of Mercury by Galvanism; Biliary Calculi; and the Freezing Point of Spermaceti.* A continuation of papers Nos. 3 and 5; and gives an account of two specimens of efflorescence, sulphate of soda in a state of almost perfect purity, and very fine sulphate of magnesia; the latter on the surface of a free-stone on the inside of the west aisle of York Minster. The concretions found in the salivary duct were phosphate of lime chiefly united with coagulated albumen. Dr. B., in this paper, states that he has deflagrated mercury by galvanism, which is, I believe, the first instance of the kind recorded. He details the experiment. The observations on biliary calculi are brief, but tend to show that the dark-coloured particles of gall-stones do not appear to be the inspissated resin of the bile.

9. (Vol. XVI. p. 161.) *Experiments on Palm Oil.* An interesting examination of its properties by various chemical agents. The fusibility of this oil is nearly similar to that of animal fat, while in its chemical properties it more nearly resembles the resins, though it differs from those bodies by not being soluble in nitric acid.

10. (Vol. XXIV. p. 1.) *On the Union of Tan and Jelly.* This may be

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regarded as the continuation of No. 7. He admits the results of his experiments on the whole to have been unsuccessful, as to determining with precision the qualities of the compound, and the quantities of the ingredients. Jelly and tannin do not unite in one constant proportion, although jelly may be employed as a test of the presence of tan in any vegetable infusion, yet the quantity of astringent matter contained cannot be ascertained by the weight of the compound which it forms with the jelly. This, to a certain degree, invalidates the analysis of Davy and others made of astringent vegetable substances.

11. (Vol. XXIV. p. 204.) *On Vegetable Astringents.* The experiments referred to in the preceding paper, led Dr. B. to observe the action of a number of re-agents upon the different astringent substances he employed; and as the conclusions he arrived at were, in some respects, different to those adopted by the most approved systematic writers, he was induced to transmit this paper to the journal. The first subject selected for experiment was gall-nuts, which are known not to be homogeneous, and the infusion, therefore, obtained from them varying in a very considerable degree. He found the infusions to differ by one-third of their solid contents. A great variety of experiments are detailed, and those are followed by similar ones on rhatany.

12. (Vol. XXIV. p. 241.) *On the Same.*

13. (Vol. XXV. p. 196.) *Remarks upon Meteorology, with a Specimen of a New Meteorological Table.* All observations upon this science, made by careful experienced men, must be of importance in advancing a knowledge of its principles, which are still but imperfectly understood. Dr. B. thinks the benefit hitherto derived from meteorological tables, do not compensate for the trouble attendant upon making them. Much individual knowledge has undoubtedly been obtained without the aid of science, in subjects of this nature; and to combine those which have resulted from uneducated observers, and those obtained by scientific deduction, appears to have been the object of Dr. B. in the construction of his table.

14. (Vol. XXVIII. p. 280.) *Remarks on Mr. Dalton's Hypothesis of the manner in which Bodies combine with each other.*

15. (Vol. XXXII. p. 18.) *Experiment to prove whether Water be produced in the Combination of Muriatic Acid Gas, and Ammoniacal Gas.* This paper is the joint composition of Dr. B. and Dr. Traill, and was read before the Literary and Philosophical Society of Liverpool.

16. (Vol. XXXIII. p. 147.) *A Correspondence between Dr. Bostock and*

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Dr. Marcet, on the subject of the Uncombined Alkali in the Animal Fluids. Dr. George Pearson and Dr. Marcet had maintained a controversy respecting the nature of the uncombined alkali in the serum of the blood. Dr. B.'s attention was drawn to this subject, and he made many experiments to investigate it. He first supposed with Dr. P. that the substance had been potash; but he was at length induced to agree with Dr. M., who proved it to be soda.

There are four papers, by Dr. Bostock, in the "Annals of Philosophy:"

1. (Vol. III. p. 32.) *Remarks on the Hypothesis of Galvanism.* These have been introduced into his latter publications on this subject.

2. (Vol. XI. p. 198.) *Some Observations on the Imperfection of the Barometer.*

3. (Vol. XI. p. 391.) *On Blue Iron Earth.* The native Prussian blue was never discovered in Great Britain, until Dr. B. observed it at Knotshole, near Liverpool.

4. (Vol. 17. p. 46.) *Some Observations on Whale Oil.* These are the result of experiments which were made to ascertain the changes produced in oil, by exposing it for a length of time to an elevated temperature.

To the "Quarterly Journal of Science," edited at the Royal Institution, (Vol 18, p. 312,) Dr. B. furnished a paper *On Evaporation.* This communication refers to some experiments made by Mr. Daniell on this subject, and relates to the absolute amount of evaporation from a given surface of water in different states of the atmosphere.

In the first volume of the "Medical and Physical Journal," Dr. B. printed *A Case of Epilepsy*, which appeared to be benefitted by the exhibition of the nitrate of silver. The advantages to be derived from the use of this medicine has been proved to have been overrated.

In 1804, Dr. Bostock addressed to the Medical Society of London *Two Cases of Diabetes, with Observations on the Different States of this Disease.* The author gives a minute analysis of the urine, and the changes produced by the application of the various chemical tests. He ascertained the presence of sugar and of urea in one case (diabetes mellitus), and in the other (insipidus) there was a deficiency of urea, and probably also of the muriate salts, whilst the phosphates were found to exist in a greater proportion than ordinary. The society voted their honorary medal to Dr. B. for this communication.

Dr. Bostock has been a valuable contributor to the Transactions of the Medico-Chirurgical Society. There are eighteen papers:—

1. (Vol. I. p. 47.) *On the Gelatine of the Blood.* In this paper the

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author gives an historical sketch of the discoveries and opinions that have been entertained with respect to the composition of the blood. Senac has been generally regarded as the first to have introduced the terms coagulable lymph and serosity, and De Haen to have detected the presence of gelatine. The latter, however, Dr. B. assigns to Fourcroy,* and his views have been further developed by Parmentier and Deyeux. Dr. Bostock is disposed to question the existence of jelly as a constituent of the blood, and he derives this opinion from the effects of the different tests he has employed in the analysis of animal fluids, and from the consideration of the physical properties of jelly. Examination of the fluid formed in cases of hydrocephalus internus, hydrocele, &c. have served to strengthen him in the opinion he has thus expressed.

2. (Vol. II. p. 162.) *Experiments and Observations on the Serum of the Blood.* The subject of this paper may be looked upon as a continuation of the inquiry involved in the preceding communication. The author determines, from numerous experiments, that no gelatine exists in the serosity of the blood.

3. (Vol. III. p. 107.) *Observations on Diabetes Insipidus.* As an idiopathic disease, this is of most rare occurrence. In most cases it is probably the commencement of the diabetes mellitus. The paper contains an account of some experiments made on the extract from diabetic urine.

4. (Vol. III. p. 146.) *Experiments on the Bark of the Coccoloba Uvifera.* This substance is similar in its nature to kino; but it is not from the same plant. Dr. B. gives as the result of his analysis: woody matter 50, tan 41, balsamic substance 9,=100.

5. (Vol. IV. p. 38.) *Analysis of the Bones of the Spine, in a Case of Mollities Ossium.* In 100 parts of the bone, Dr. B. found cartilage to form 57,25; jelly and oil 22,5; and earthy matter only 20,25. Healthy human bones may be regarded as containing one half their weight of earthy matter.

6. (Vol. IV. p. 53.) *On the Nature and Analysis of Animal Fluids.* Professor Berzelius and Dr. Bostock appear to have arrived at many similar conclusions in their examination of animal fluids, without concert or communication with each other. The observations in the present paper relate chiefly to the albumen and the uncoagulable part of the serum. The means by which the presence of mucus, or muco-extractive matter is to be detected, is very satisfactorily given. Dr. B. has particularly examined thirteen

* MM. Fourcroy and Vauqelin, in 1790, announced the discovery to the Academy of Sciences of Paris. *Annales de Chimie*, tom. vi. p. 182.

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albuminous fluids, and he submits a tabular view of their analyses. Of the mucous fluids, he gives an account of the saliva, the fluid of the stomach, a peculiar fluid discharged from the bladder, and a fluid obtained from a patient labouring under ascites. He also gives an account of some fluids found in tumours that have been met with in muscular and in glandular parts, and to these he gives the name of *particled;* they are of the albuminous kind, having a substance very similar to spermaceti. In one instance he met with a peculiar substance, of a nature intermediate between albumen and wax—*albumino-cerous* matter.

7. (Vol. 5. p. 80.) *Account of a Chemical Examination of the Urine and Serum of the Blood of a Person who had been taking large quantities of Soda.* A young lady, threatened with symptoms of pulmonary consumption was induced to take large quantities of soda, and for a considerable time took two ounces and a half of the subcarbonate daily. The urine was rendered copious, her appetite and strength improved, but no other sensible effect was produced. The urine contained a quantity of uncombined alkali, and this probably in the carbonated state. The serum had also an unusual quantity of uncombined alkali; it was of a deep lemon colour, and after coagulation, and the action of the muriatic acid and the oxymuriate of mercury upon it, the existence of a substance which has not before been observed in the blood was ascertained. It was of an adipocerous nature.

8. (Vol. IX. p. 1.) *A Case of Loss of Power over the Voluntary Muscles.* The motion of the lower extremities and the power of articulation were entirely lost; the action of the hands and arms was nearly so; deglutition was extremely difficult; and the jaws could only be opened sufficiently to admit a small tea-spoon. The intellectual faculties remained perfect. A minute *post-mortem* examination of the brain exhibited no morbid appearance. Dr. B. and Mr. Christian thought they observed "A slight furrow across the spinal cord, as if it had been compressed by a transverse ligature, and this in the place where it passes under the ring of the atlas; and upon attentively noticing this part of the bone, it appeared a little thickened, and of a yellowish colour. These appearances, however, were not very distinct, and the change of structure existed in so slight a degree, that it would probably have escaped observation, had any other morbid derangement presented itself." The case is obscure, and the cause not apparent. It is difficult to admit the suggestion made by Dr. B. that the muscles should have been in a diseased state, rendering them insensible to all impressions from the nerves, and yet present no morbid character.

9. (Vol. X. p. 77.) *An Account of a Substance obtained from a diseased Ovarium, &c.* This case occurred in the practice of Dr. Merriman. The

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fluid discharged was of an unctuous nature, and assumed a solid form upon being exposed to the atmosphere. It was similar to pure lard or butter, and did not become putrid after being kept four months. It was a concrete oil, containing neither alkali nor any saline ingredient, and very little, if any, albumen.

10. (Vol. X. p. 161.) *Case of a Periodical Affection of the Eyes and Chest.* This paper carries an additional interest from its having occurred in the person of Dr. Bostock. It exhibits an unnsual train of symptoms, for which it would be very difficult to give any satisfactory account.

11. (Vol. XII. p. 94.) *Note to Mr. Dowler's Paper on the Products of Acute Inflammation.* This relates to some experiments made by Dr. B. in 1807-8 on the chemical composition of the buffy coat of inflamed blood.

12. (Vol. XIII. p. 73.) *Observations on the Saliva during the Action of Mercury upon the System.* The Saliva was found, in its chemical constitution, to be considerably different from its natural state; and this difference consisted in its containing a quantity of animal matter, possessing properties similar to those of albumen in its uncoagulated state, or as it exists in the serum of the blood. The most delicate tests could not discover the presence of the mercury in the saliva.

13. (Vol. XIV. p. 424.) *Analysis of a Specimen of Cutaneous Perspiration.* The case is detailed by Dr. Bright. The specific gravity of the perspirable matter was found to be 1,0117 and it was very slightly alkaline. The result obtained by analysis is as follows: Water 981,7. Animal Matter 4,6. Muriate of Soda 12,56. Soda 1,14. Phosphates and Sulphates a trace=1000.00.

14. (Vol. XIV. p. 437.) *Of the Catarrhus Œstivus, or Summer Catarrh.* Dr. B. alludes to several cases of this affection, similar to his own, recorded in the 10th vol. of the Transactions. He ventures to express doubts as to this affection being attributable to the effluvium from hay, as suspected; but the subject requires investigation.

15. (Vol. XV. p. 154.) *Analysis of a quantity of fluid drawn off from a Hydrocele of some years' standing.* This fluid contained an albumino-cerous matter, similar to that described in No. 6.

16. (Vol. XVI. p. 72.) *History of a case of Stammering, successfully treated by the long-continued use of Cathartics.* It would not be safe to draw an inference from a single case; but the one related by Dr. B. ought to direct the practitioner to the condition of the *primæ viæ*, in cases of stammering.

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17. Vol. XIX. p. 81) *On the Chemical Constitution of Calcareous Tumours of the Uterus and other parts.* Calcareous and bony deposits have been found in almost all the textures of the body; and are, upon analysis, generally found to be composed of the phosphate of lime, and a small proportion of the carbonate, connected together by animal matter, In eleven instances Dr. B. found only one to offer an exception to this statement. It was from the uterus: and in this case the quantity of the carbonate preponderated over that of the phosphate.

18. (Vol. XXI. p. 25.) *Observations on the Constitution of the Urine.* Dr. B. proposes in this paper to reduce the experiments to a tabular arrangement, so that attention may be exclusively directed to a few well-defined objects, admitting of comparison with each other. Many advantages would be derived from the adoption of such a method, as the urine is known to hold in solution an immense variety of substances, the presence of which is not justly to be considered as denoting disease. The circumstances selected by Dr. B. consist of external characters, including colour. odour, clearness, specific gravity, and degree of acidity referred to a fixed standard; presence and amount of albumen; amount of residuum after evaporation; proportion of residuum soluble in alcohol; amount of saline contents; amount of calcareous salts; and spontaneous changes.

From the foregoing detail it will be evident that Dr. Bostock is characterized by a bold and ingenuous spirit of enquiry, and that he has been actuated by an ardent desire for the advancement of medical knowledge. His labours have materially contributed to promote the department of Animal Chemistry—a subject of great difficulty and importance. Although he has long withdrawn from the active duties of his profession in relation to practice, he has, nevertheless, been anxiously attentive to the interests of its members. Accordingly, we find that in 1834, when the subject of medical education was strongly agitated, and various means devised for its improvement, that Dr. Bostock circulated among his friends the *Outlines of a Plan for the future Regulation of the Medical Profession*, by which he proposed to ensure to the public a succession of competent medical practitioners, to promote the respectability and dignity of the profession, and at the same time to encroach as little as possible upon the rights and privileges of existing institutions. The length to which this memoir has already necessarily been extended; prevents my entering upon any consideration of the *plan* in this *place*, but I shall embrace an opportunity of doing so, when an opportunity shall present itself on some future occasion.

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JOHN CHEYNE, M.D. F.R.S.E. M.R.I.A.

PHYSICIAN GENERAL TO THE FORCES IN IRELAND,

&c. &c. &c.

Sapere est principium et fons.—HORAT.

JOHN CHEYNE was born on the 3rd of February, 1777, at Leith, the seaport of Edinburgh. Many members of his family were of the medical profession. His father practised medicine and surgery, and was a man of great cheerfulness, benevolence, good sense, and singleness of mind. He had succeeded his uncle, John Cheyne, a kindred spirit, and one who had acquired the enviable name, of the friend of the poor. Dr. Cheyne's great grandfather and his family were prelatists, and devoted to the Stuarts, to whose agents, they, in 1715, lent considerable sums of money, which were never repaid; and his portrait, by Sir John Medina, still hangs in the Hall of the College of Surgeons, in Edinburgh. His mother was the daughter of Mr. William Edmonston, also a Fellow of the College of Surgeons, and of his wife, Cecilia Bayne, sister to William Bayne, who was mortally wounded in Lord Rodney's great battle, while in command of the Alfred, 74, being the senior of the three Captains to whom a monument was erected in Westminster Abbey; and daughter of Alexander Bayne, professor of Scots Law, in the University of Edinburgh, whose life appears in the "Penny Cyclopædia," and who is noticed in D'Israeli's "Calamities of Authors." His mother was an ambitious woman, of honourable principles, constantly stimulating her children to exertion, and intently occupied with their advancement in life.

After passing four years at the grammar-school of Leith, young Cheyne was, in his tenth year, sent to the High School of Edinburgh, and at once placed under the care of Dr. Adam. the Rector, or Head Master, for whose

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class he was in no respect prepared. In consequence of this ill-advised step, he is reported to have been, in general, very unhappy while at the school, being unable to keep up with many of his companions, and he often feigned sickness, and submitted to take medicine that he might be kept from school.

Soon after he left the high school, he was placed under the tuition of a clergyman of the Episcopal Church of Scotland, a good scholar, but a foolish and dissipated man: both master and pupil had more relish for idle talk than for Homer or Virgil; and as he did not exact careful preparation, young Cheyne was seldom prepared, so that, although he went to him daily, for two years, little was added to his stock of Greek and Latin.

In his 13th year, he began to attend his father's poor patients. He was sent to ascertain that they were supplied with medicines, to bleed them, to dress their wounds, and report upon their condition. In this way he obtained an early acquaintance with diseases, and his after success in treating them seems to have arisen in a great measure from his knowledge of their characteristic expression, rather than from any other qualification he possessed. Before he had reached his sixteenth year, he had began to attend medical lectures, in the University of Edinburgh. Dining at a boarding house every day, with several medical students, who were qualifying themselves for the Doctorate, he found that he was as well acquainted with medical subjects as most of them, and therefore he resolved upon presenting himself to the professors, when they did. By frequenting a club of students, of which the members alternately examined each other in anatomy, physiology, theory and practice of physic, &c., and by the assistance of Mr. Candlish, a celebrated grinder of that day, his superficial knowledge of Latin and of medical science was made to answer the end in view, and he passed his examination without difficulty, and obtained a medical degree in June 1795.

On the day after his graduation, (having previously procured a surgical diploma,) he left Edinburgh for Woolwich, the head-quarters of the Royal Regiment of Artillery, to which corps he had been appointed one of the assistant surgeons. He served in various parts of England, till the end of 1797, when he obtained the local rank of surgeon, and accompanied a brigade of horse-artillery, under Lieutenant-Colonel Howorth, to Ireland. With part of that brigade, commanded by Lord Bloomfield, he was present at the actions with the rebels, which took place at Ross, Vinegar Hill, &c., in 1798.

While he was assistant surgeon and surgeon in the Artillery, from 1795 to 1799, his time was spent in shooting, playing billiards, reading such books as the circulating library supplied, and in complete dissipation. He studied

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nothing but the manners of his superiors, and learnt nothing but ease and propriety of behaviour; happily, however, at last, he became dissatisfied with his prospects, felt anxious to distinguish himself in his profession, and was conscious that unless he made a strenuous effort without delay, he must be content with a subordinate station which his vanity would not have permitted him tamely to occupy: he, therefore, in 1799, left the horse artillery and returned to Scotland, resolved once more to become a medical student. On his return he was appointed to the charge of the Ordnance Hospital in Leith Fort; and he undertook to act as his father's assistant, whose practice, especially among the poor, was very extensive. He selected, for study, the best cases from those which fell to his lot in a division of the business of the day. These cases he journalized; and when he foresaw that a disease would end unfavourably, he took measures to insure a necroscopic examination. At this period he happily formed a friendship with Mr., now Sir Charles Bell, who, then particularly occupied with the study of pathology, was laying the sure foundation of the highest professional eminence. Sir Charles opened most of the bodies which Dr. Cheyne obtained permission to dissect, taught him many things which he might not otherwise have learned, and confirmed his taste for distinction. As an example of diligence in study, Sir Charles could not be excelled; and it was already manifest that he was a man of great originality of mind.

Dr. Cheyne resolved, whenever he should think himself fit for the undertaking, to attempt to establish himself as a physician in a large city, and in the mean while to devote every leisure hour to the necessary preparation. His attention was accordingly directed principally to those diseases which he had the fullest opportunity of studying—to the *diseases of children, acute diseases, and epidemics.* When a well-marked case of disease occurred, or when an epidemic arose, he obtained the best monograph he could on the subject, and attentively compared the information which it contained with the opinions of the most experienced of his professional brethren, whom he had frequent opportunities of meeting; and then he filled up his case books: thus, by means of observation, reading, and the experience of others, his mind was made up on the most important points of practice, and with decision he acquired a facility of prescription in acute diseases, which proved of great advantage to him, especially in dispensary practice. With respect to chronic diseases, in addition to the assistance he derived from books and observation, he obtained aid from a mass of consultations, many of them written with great care, by the most eminent physicians in Edinburgh, during the middle and end of the eighteenth century, which had been preserved by his granduncle, father,

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and grandfather Edmondston. Dr. Cheyne endeavoured to become acquainted with the character of those who had obtained the highest rank in the profession of medicine in Edinburgh, to discover the causes of their success; and he ascertained that although a man might acquire popularity by various means, he could not reckon upon preserving public favour, unless he possessed the respect of his own profession; that if he would effectually guard his own interest, he must, in the first place, attend to the interests of others; hence he was led carefully to study, and liberally to construe, that part of medical ethics which regulates the conduct of physicians towards each other.

The surgeons in Edinburgh, during his residence in Scotland, were thrown into a state of disagreeable excitement by an attack which Dr. Gregory made on their connexion with the Royal Infirmary. The members of the Royal College of Surgeons were surgeons to the Royal Infirmary, each in rotation for two months; those who were not distinguished as operators, or who were not in the vigour of life, generally declining their hospital attendance. Dr. Gregory attacked this system in a series of pamphlets written with great plausibility and humour; but with very little regard to the feelings of individuals. He proposed that certain members of the college should be chosen by the managers of the infirmary as permanent, consulting, attending, and assistant surgeons; and he prevailed upon the managers to adopt this plan. The rancour evinced by many physicians and surgeons on this occasion, who thought that Dr. G. was using the infirmary as a stalking horse to lucrative employment, although not unprovoked, was so discreditable, as to lead Dr. Cheyne to resolve to avoid professional disputes; and to suffer injury rather than attempt to right himself, unless his moral character was likely to be endangered by forbearance.

After passing nine years in the study of pathology and in the practice of medicine, he resolved upon quitting Scotland, and instituted inquiries in several parts of England without discovering any situation which promised to suit him. He was anxious rather for an opportunity of distinguishing himself than of securing a large income; and with that view he offered his services to the late Dr. Rollo, surgeon-general to the Artillery, who, some years before, wished to establish a school of clinical medicine at Woolwich, for the instruction of the medical officers of the Artillery, then a numerous body. He proposed to give clinical instructions to the junior officers of the establishment, and all he asked in return was the rank and allowances of physician to the forces; but his application came too late—disappointment and disease had quenched Dr. Rollo's zeal for the department over which he had some time before presided with great ability; and Dr. Cheyne never received an answer to his application.

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About this time he received a very particular account of the state of the medical community in Dublin, which probably made the deeper impression on him, as it came from one who was not aware of his intended removal from Scotland. He immediately prepared himself for a visit to Dublin, whither he went in the latter end of March, 1809, leaving Mrs. Cheyne in Antrim, with her father, the Rev. Dr. Macartney, vicar of that parish. He soon determined upon remaining in Dublin, in which he found the profession of medicine duly respected. This was chiefly attributable to the eminence of the physicians in that city, during the preceding fifty years: Dr. Smith, who was brother to the Archbishop of Dublin, remarkable for his munificence, Sir Nathaniel Barry, whom Mr. Grattan once characterized as the most accomplished gentleman he had ever known, Dr. Quin, Dr. Plunkett, the witty, accomplished and amiable brother of the Lord Chancellor, and Dr. Perceval, distinguished for scientific knowledge, but more so for his philanthropy. Moreover, the memory of Macbride, Cleghorn, and Perceval, was still cherished by many. Dr. Cheyne soon found that the field was extensive, and the labourers liberally rewarded. The physicians then in the confidence of the public were mostly of the school of Cullen—they were possessed of good general information, but relied chiefly on their symptomatology; they had paid but little attention to morbid anatomy. Much of the pure medical practice of Dublin was passing into the hands of the surgeons, who were better acquainted with the nature and tendency of organic lesions. Being well informed on the subject of acute diseases, and having acquired a taste for pathology under Sir Charles Bell, Dr. Cheyne was well prepared for fair competition.

In the latter end of 1809 he took his position as a candidate for public favour in Dublin, where he had passed the summer; neither expecting nor indeed wishing for rapid advancement. What is easily acquired is little valued and often soon lost. He had a few friends who were much dissatisfied with his apparent apathy, and the obscurity in which he lived, who wished him to go more into company, and even to give entertainments to those who had it in their power to advance his interests; and so much was he urged by his friends to this course, that at last he reluctantly yielded to their importunity; but as his circumstances did not admit of his providing entertainments with comfort to himself, he refused to repeat the injudicious experiment. True it is, that his friends could derive little encouragement from his apparent progress during the first two years of his sojourn in Dublin:—from the 9th November, 1810, to the 4th of May, 1811, a period of nearly six months, he received only three guineas; but then he felt that prejudices against him were giving way, and that he began to be regarded

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with good-will by some of the most respectable of his brethren, who, in the latter end of 1811, procured him the situation of physician to the Meath Hospital. This was a very important step, for although the old Meath Hospital was a small, mean, and gloomy building, yet his colleague, Dr. Egan, was much esteemed; and of the six surgeons to that hospital, there were at least three who were superior men; moreover, the medical officers were elected by the medical board, who by their choice placed him on their own level; his situation, therefore, not only afforded him an opportunity of evincing attention and knowledge of disease, but it was the best attestation which he could have obtained of competency to perform the duties of an hospital physician, and what he most required at that period was to be accredited.

During the late war the Irish College of Surgeons had become an extensive nursery for the supply of medical officers to the army and navy, and about this time the directors of the School of Surgery in the college thought it expedient to add to their other professorships, one of the practice of physic. Dr. C's. attendance on the Meath Hospital procured his election to this office. His lectures at the College of Surgeons, which were very full on the subject of military medicine, were attended by nearly all the surgeons and assistant surgeons in the garrison, to whom they were free. These lectures, thus respectably attended, of which he delivered five courses, and his duties at the Meath Hospital, which was also the seat of a crowded dispensary in which he daily prescribed for all the medical patients, occupied all the time which could be spared from private practice, now increasing as rapidly as his friends could wish.

In the month of October, 1815, he was appointed by the Lord Lieutenant, one of the physicians to the House of Industry, which lay at a distance of two miles from his house. There he had to visit upwards of seventy patients, in acute diseases daily; most of these had fever, of which probably eight or ten demanded careful examination. As he had experienced and well trained sick-nurses, who allowed nothing to escape their observation, the rest of the patients required only a glance of the eye, so the visit was always finished in little more than an hour: but he now experienced great fatigue from that stretch of the mind which arises from going the round of an hospital; then the walk to and fro required more than an hour, and he invariably returned so much exhausted that he felt it necessary to resign his professorship at the College of Surgeons, as well as his charge of the Meath Hospital, that his private practice, which, in 1816, yielded him £1710, might not suffer by the extent of his official duties.

When he received the appointment of physician to the House of Industry,

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Dr. Edward Perceval, who came to Dublin at the same time that he did, was one of the physicians to that establishment. They immediately resolved upon endeavouring to form a clinical school, and a museum of morbid anatomy at the House of Industry—both of which objects it seemed as if, with the aid of the surgeons, they could have accomplished without much difficulty. Within the precincts there was an extensive fever-hospital; an hospital for chronic diseases; extensive wards, and separate cells for lunatics; a large asylum for destitute children; and an immense number of paupers, with bodies in every stage of disorganization. Their plan also included digested annual reports of the diseases which fell under their observation. And this ultimately led to the publication of the Dublin Hospital Reports; but the plan, in every other respect, failed; Dr. E. Perceval shortly after settled in Bath, consequently Dr. Cheyne was left alone. The fever which ravaged Ireland for upwards of two years, became epidemical in Dublin, in 1817, and the House of Industry was converted into a depôt for patients in fever, upwards of 700 being accommodated, by order of government, in that institution; and, lastly, in many of the wards, dysentery broke out, and was the chief object of Dr. Cheyne's solicitude during the latter part of his connexion with the House of Industry.

Upon the death of Dr. Harvey, Physician-general to the Army in Ireland, he applied, without success, for his situation. There were several applicants, whose claims the Lord-Lieutenant found it not easy to adjust, and therefore he escaped from the difficulty by appointing Dr. Perceval, who had not applied for the vacant office; but who, in point of character and professional rank, had a better title to the situation than any of those who were candidates for it. Dr. P. accepted the office, on condition that the Lord-Lieutenant would permit him to have an assistant in the duty of attending the general military hospital. Dr. Cheyne was applied to by Dr. Perceval to assist him in his hospital charge; and in order to comply with his wishes, Dr. Cheyne thought it necessary to resign his appointment in the House of Industry. Dr. Perceval, however, soon resigned his office, upon which Dr. Cheyne was appointed to succeed him by the Earl Talbot, then Lord-Lieutenant of Ireland. His patent bore the date of Oct. 7, 1820. The situation of physician-general, which was abolished in the end of 1833, was conceived, when Dr. Cheyne obtained it, to confer, on the possessor, the highest medical rank in Ireland; and as his practice then yielded him about £5,000 (which was its annual average during ten years), he felt that he had fully obtained the object of his ambition.

His constitution, naturally weak, was always injured by fatigue of body or anxiety of mind. Hence, before long, he was obliged to circumscribe his

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practice, by refusing to go to a distance from Dublin, or to undertake attendances in the country. By arrangement, punctuality, attention to the interests and feelings of his professional brethren, and prudence, he now tried to avoid those reverses to which professional life is ever subject. He was more generally employed as a consultant than as an attendant physician, and he endeavoured to escape interruption in his chief line of business.

The course of Dr. Cheyne's prosperity was at last arrested by the decline of his health.

——— "Man is born to suffer. On the door
Sickness has set her mark."

In the end of the year 1825, when he was about to enter into his forty-ninth year, a period which is often critical to those who are engaged in anxious business, he became affected with a species of nervous fever. In the autumn of that year, dysentery proved fatal to many of the inhabitants of Dublin. Disappointment often attended the means which were employed for their relief, and a pretty constant depression of his spirits was the consequence of unsatisfactory practice; at the same time, his mind was harassed by anxieties not connected with his profession. He became so weak, that he was unable to dress in the morning till he had had coffee, and when he returned from a day of toil, at seven or eight o'clock in the evening, he was obliged to go to bed, to obtain rest, before he was able to dine. After a struggle of two months, he repaired to England, and recovered some strength, and thought he was again able for business, to which he returned too soon. On his arrival in Dublin, he found one of his professional friends, the father of fifteen children, labouring under a disease—which proved fatal, expecting Dr. Cheyne's return, that he might put himself under his care. The sufferings of this patient proved an incubus on Dr. C.'s spirits, which strangled every cheerful thought. He now began to comprehend the nature of his own illness, namely, that a climacteric disease, what physicians, in former times, termed a nervous atrophy—was forming, which slowly, though surely, was effecting its appointed mission. By relaxing as much from care as he could, sleeping out of town, attending to regularity of meals, getting an experienced medical friend to prescribe for him at the General Military Hospital, and confining himself there to the duties of inspection, the progress of his illness was retarded, and he continued in Dublin till the beginning of 1831, when medical practice at last proved an intolerable burden. "The vigour of the mind decays with that of the body, and not only humour and

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invention, but even judgment and resolution, change and languish with ill constitution of body and of health."* His sleep was broken and unrefreshing; in the morning he was languid and dispirited, and in the evening, he had a high degree of nervous fever. He therefore resolved upon relinquishing business at a time when, had his health been unimpaired, he might, to all appearance, have retained it undiminished. Upon his retirement from Dublin, he was addressed by the physicians, the surgeons, and the apothecaries, of the Irish metropolis. The addresses expressed, in the warmest terms, the sentiments of esteem they entertained for his private virtues, and the respect they felt for his professional character—deeply deplored the necessity of his retirement, and ardently hoped for his recovery—hopes, never to be realized.

Being, however, of the opinion of those, who think it better to wear out than to rust out, and seriously apprehending the consequences of want of suitable occupation to a mind that had long been in a state of excessive activity, Dr. Cheyne no sooner found himself settled in a country village, in England, than he devised such employment as might not be inconsistent with health slowly declining, and with diminished powers of application. Three mornings in the week, he went to a neighbouring cottage, and saw the sick villagers, giving them advice, and dispensing medicines, which were prepared in his family; thus, many an attack of illness was nipped in the bud, and much suffering was lessened. On a fourth morning, the sick came to him from distant parts of the country, for whom he prescribed: and, as there was no physician within twelve miles of the post town nearest his house, he was occasionally consulted by some of the more respectable families in the neighbourhood.

A charge is often brought against physicians, that after they have gathered in their own harvest, they never think of showing how the ground may be cultivated by others. Dr. Cheyne, however, wished to prove that he still retained an interest in his profession, even after it had ceased to yield him emolument; and, therefore, he gladly undertook to write some articles for the Cyclopædia of Practical Medicine, in compliance with the request of Dr. Tweedie, one of the Editors of that work. He was thus again led to the use of his pen, and began to extend his inquiries to other subjects, recollecting and recording facts and reasonings, which, in the hurry of business, he had almost let slip; but an end was soon put to this employment by the formation of a cataract in his right eye, in the beginning of 1833, which deprived him of the use of that organ. His left eye became dim, and his strength altogether so much exhausted, that he was obliged to relinquish any

* Sir William Temple.

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further pursuit in his profession. His frame now gradually verged towards decay; four months prior to his decease, a mortification of one of his feet took place, and he sunk on the 31st of January, 1836, at the village of Sherrington, near Newport Pagnell, in Buckinghamshire, where he had purchased an estate in 1829: thus—

> "Slowly departing to return no more,
> He rests in holy earth, with them that went before."

In a short Biographical sketch in the Dublin Journal of Medical Science (Vol. IX. p. 171), Dr. Cheyne is thus noticed:—

"To speak of Dr. Cheyne's writings, and of the estimation in which they are held, would be superfluous. Whether viewed with reference to the elegance of their style, or the sound practical precepts and improvements which they inculcate, they hold a foremost rank among the medical works of the day. No man ever maintained, in the circle in which he practised, more respect and confidence from his professional brethren, or a higher character with the public as a skilful physician. In consultation, he displayed a penetration in the diagnosis of disease, and a readiness and sincerity in the communication of his experience in similar cases, which never failed to secure the confidence of the practitioner, at whose recommendation he had been called to the attendance. He had, moreover, the enviable quality of observing the most honourable conduct toward the gentleman in attendance with him, without a compromise of the duty which he owed to the invalid: he directed the treatment, without arrogating to himself any merit for its success; and assisted the efforts of his junior, without lessening towards him the confidence of his patient. Dr. Cheyne's punctuality to appointments was another feature in his character, which rendered professional intercourse with him peculiarly satisfactory; and even in the days of his most varied and extensive practice, he treated the youngest member of the profession with the same polite consideration, in this particular, as the oldest."

The foregoing extract is particularly interesting, as being the opinion of his contemporaries, and of those who were in the daily habit of witnessing his practice; the same writer also says, that—

"His exterior deportment bore the appearance of indifference to the afflictions which were every day presented to him; but his inward feelings on those occasions were at variance with the impressions left by those visits. His mind was frequently disturbed, and his spirits depressed, by the scenes of bodily and mental suffering, which the practice of his profession incessantly brought under his notice; and his sympathies, instead of being blunted by the habitude of meeting with such objects of compassion, were rendered more acute by the repetition. Indeed, to this source may be traced the seeds of the malady under which his constitution, otherwise a good one, finally broke down."

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Dr. Tweedie has confirmed this statement to me; and, as an evidence of Dr. Cheyne's sensitiveness, says that he once told him, he had that day seen thirteen patients, all of whom were moribund, and that he therefore did not expect any of them to be alive on the morrow. This, he said, was too much for him—he was unable to bear it, and he determined to fly from such scenes of hopeless and helpless affliction.

The literary labours of Dr. Cheyne, now to be noticed, must command our respect. They are numerous, and distinguished by their practical utility. They demonstrate the accuracy of observation, the acute penetration, and the patient attention of their author. Experience has here its full advantages, and the works of Dr. Cheyne will remain to his profession, a valuable series of essays on some of the most important diseases to which the human frame is subject.

In 1801 Dr. Cheyne directed his attention to a branch of Pathology, little regarded before the close of the last century—that which relates to the *Diseases of Children.* This is treated of in three distinct Essays, published in 1801, 1802, and 1808. The *first* of these treats of *Cynanche Trachealis, or Croup*, a disease of common occurrence in Scotland. As the subject of this Essay formed the groundwork of a more complete publication on the Pathology of the Larynx and Bronchia, presently to be noticed, I shall pass on to the *second* Essay, which is *On the Bowel Complaints, more immediately connected with the Biliary Secretion, and particularly of Atrophia Ablactatorum.* A few observations on the connexions of the hepatic system precede the work, they being intended to demonstrate the sympathy which exists between that system and the functions of the intestinal canal. Dr. Cheyne views the *Jaundice* of newly-born children as a very fatal disease—if not speedily terminating, generally ending in a marasmus. The fatality, he presumes to arise from some malconformation in the liver, which, however, he does not satisfactorily make out, conceiving it *probably* to be an impermeable thickening of the beginnings of the hepatic duct or *Pori Biliarii.* This disease appears, from the statements made in Underwood's Treatise on the Diseases of Children, and Dr. Cheyne's experience, to be hereditary in some families; and Mr. Pearson furnished Dr. Underwood with a very remarkable instance, in which eleven children all died of jaundice—ten within one month from the period of their birth, and the eleventh at the age of six years. The chief monograph in this Essay is that marasmus, which is common to children weaned at too early a period, or at an unfavourable season of the year. In Scotland, this disease has been commonly termed the *Weaning Brash.* Dr. Cheyne gives to it the scientific designation of *Atrophia Ablactatorum.* The disease gives rise to a morbid condition of the glandular system

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of the mesentery. The liver, however, he conceives to be the organ primarily affected, and he supposes this viscus to sympathise with the intestinal canal —to be irritated by the change of food—to be called upon for greater exertion—to pour forth an acrid bile, and thus maintain the irritation. Dr. Cheyne argues against any connexion of this disease with the process of teething, to which indeed he is not at all disposed to refer any of the derangements of the infantine system. He looks upon this disease as one belonging to the autumnal months, and therefore suggests that delicate children should at that season be kept a month or two longer on the breast than at any other period of the year. Calomel is the remedy upon which Dr. Cheyne placed reliance in these cases.

The *third* Essay is on *Hydrocephalus Acutus, or Dropsy in the Brain.* This appeared in 1808, inscribed to Mr. Charles Bell, whose elegant drawings form the illustrations of the preceding Essays. In 1815, Dr. C. published a *second* Essay on this subject. The first accurate history of the disease is to be ascribed to Dr. Whytt, in 1768, and it has since engaged the attention of physicians, both abroad and at home; yet, its nature is in some respects but imperfectly understood, and to remedy some of these deficiencies, Dr. Cheyne put forth these essays. The author relates some very well-defined cases, and gives, altogether, a good history of the disease, and assists us materially towards arriving at its general pathology. The incipient forms of the disease are accurately noted, and the connexion of these with disordered conditions of the chylopoietic viscera, is ably pointed out. Herein, indeed, consists the particular value of Dr. Cheyne's Essays; and he may be considered as the first to have distinctly stated hydrocephalus to be occasioned by disorder of the abdominal viscera. This, I will presume, to have been meant by Dr. C., to be understood with a certain reservation. I believe, no pathologist will now deny, that hydrocephalus may, in some instances, be regarded as a sympathetic affection, produced by gastric disorder; but, that in the majority of cases, it must be looked upon as an idiopathic disease. I infer this statement to be consonant with Dr. C.'s opinions, though they are not so decidedly expressed in his writings; his observation, however, that the morbid action in the brain in hydrocephalus is *specific*, would seem to warrant my drawing this inference. Gastric irritation, following the appearance of the earlier cerebral symptoms, in my opinion, are frequently to be observed. In the pathological part, Dr. Cheyne thinks, the morbid action in the brain is *specific;* that excitement first takes place, then increased vascular action, congestion, and ultimately, effusion. The latter is decidedly the effect of the disease, not its cause. The indications of cure, he states, to be,

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1. "To remove from the constitution every irritation which either may have given rise to, or may have assisted by, morbid sympathy, in prolonging the diseased action in the brain.

2. "To subdue the Hydrocephalic action; *first*, by diminishing the increased activity of the circulation within the head; *secondly*, by substituting a new action.

3. "To alleviate pain and sickness, if very urgent.

4. "To accept every assistance offered by counter-irritations.

5. "To support and renew the strength; to support it more particularly under any critical discharge."

The remedies to be employed, to correspond to these indications, must necessarily be regulated according to the stage of the disease: local and general blood-letting, mercury, digitalis, &c. In the *second* Essay, the subject is further developed, and the connexion of hydrocephalus with disorder of the liver, and the chylopoietic viscera, more distinctly pointed out. Dr. Cheyne exhibits his liberality, in making a candid avowal, as to the claims of Dr. Curry upon this subject, in the following terms:

"I have now the satisfaction of knowing that several professional gentlemen of eminence, both in London and Dublin, have long entertained nearly the same opinion. It is twelve years since Dr. Curry, of Guy's Hospital, in his Lectures on the Practice of Physic, began to announce an ingenious pathological theory, with respect to the influence excited by certain diseased states of the liver on the whole constitution, or on some individual organ. From a general view of hydrocephalus, and a comparison of it with other diseases of the brain, he was led to the conclusion, supported by the most effectual means of cure, that the affection of the brain, though the immediate cause of death, when the case ends fatally, is, in general, only a consequence of inflammatory irritation, with diminished or altered functions of the liver."

Dr. Cheyne's additional experience enabled him to place among his remedies, that of opium, which, in combination with mercury, or mercury and antimony, after depletion, appears to have been productive of much good. Dr. Perceval had previously been in the habit of employing the narcotic in conjunction with mercury and digitalis.

In 1809 Dr. Cheyne published *The Pathology of the Membrane of the Larynx and Bronchia.* This work embraces the substance of his Essay on Croup, with the additions of his farther experience and observation. Although the arrangement of the subject is altered, the principles are the same. In the Essay on Croup, the author enters into its history, pathology, diagnosis, cure, prophylaxis, &c. He marks the different kinds with precision, and

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distinguishes the different stages of the disease, and the degrees of danger to be apprehended. The varieties of cough, voice, and state of breathing, are admirably pointed out and forcibly drawn, and are of the very first importance to the practitioner, in the treatment of this disease. The pathology he looks upon as simple.

"When the child dies, the inflammation has terminated by effusion. This effusion is of a lymph, strongly resembling purulent matter; which, exuding on the inflamed surface of the windpipe, thickens there, forming the membrane."

Dr. C. undertakes to refute Michaelis's opinion, that croup occurs as frequently in adults as in children; but that they have a greater power in throwing off the effused lymph. Dr. Cheyne, in his Essay, says, he has never heard of an example of the disease after the fifteenth year. This statement he omits in the work now under notice. Cases of Croup do, undoubtedly, occur in adults, but not so frequently as in children, as some have contended; the contracted condition of the larynx, prior to puberty, will at once show how much more formidable disease of this part and the bronchial tube must be in children than in adults, and the attacks have therefore, probably received another denomination. In the observations on the various modes of cure proposed for this disease, Dr. Cheyne notices that of bronchotomy, when the lymph is effused; and he puts forth many cogent reasons adverse to the practice, and shows that the operation is inconsistent with the correct view of the pathology of the disease. The means to be directed for the cure of croup must be adopted at the outset as the first stage, the inflammatory lasts only eight or ten hours—the lymph is then thrown out. Dr. C. relies chiefly on bleeding, and that from the jugular vein. Emetics are useful in all stages of croup; but particularly in the second, according to Dr. C. Experience, to a considerable extent, and in my own family, warrants me in saying, that emetics, at the very commencement of the attack, will often entirely arrest the disease, and that which far excels all others, is the tartarized antimony. Nothing more rapidly or more powerfully subdues inflammation; and, combined with the lancet, it is probably all that is necessary to be done, in the majority of cases, provided these measures be resorted to sufficiently early. Of calomel, Dr. C. seems to entertain no high opinion, as to its efficacy in these cases, unless they are accompanied by much febrile heat and disturbance.

I cannot close this subject, without adverting to the advantages that may sometimes be derived from the use of mechanical means in the advanced stage of the disease. In one of my children, a little girl of three years old,

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who had suffered from two previous attacks of croup, the disease (notwithstanding the employment of general bleeding from the jugular vein and from the arm, the exhibition of tartarized antimony, &c.) gained ground, and threatened the dissolution of the child. The case, indeed, appeared hopeless; and my friends, Sir Charles Clarke, and Dr. James Johnson, despairing of advantage from any other means than those which had been employed, quitted the patient in the full expectation of a fatal issue taking place in the course of a very few hours. The child was thus left to my care; and in one of those dreadful struggles for breath, with which all who have witnessed cases of croup are familiar, I was induced to pass the point of my little finger within the glottis, thereby nearly occasioning a complete strangulation of the child. The effect, however, was to dislodge the effused lymph, and from that moment the child began to recover. The ancient practitioners talk of passing a feather to promote vomiting—such a means may probably, in some few instances of the disease, produce an ejection of the lymph; though, I believe, that in the majority of cases, such a relief will even be insufficient for the cure of the disease. The case, however, which I have just related, would serve to give me confidence in resorting to the use of mechanical means, when all others had failed to give relief. In this volume Dr. Cheyne has printed, from the "Edinburgh Medical and Surgical Journal," (Vol. iv. p. 441,) *A Case of Bronchial Polypus*, which he had transmitted to that publication. He classes the polypi under two divisions, those in connexion with hæmoptoe, which appears to be simply the coagulum of the blood moulded into shape by the bronchial tube, of which cases have been given by Bontius, Tulpius, Bartholin, &c.; and those which are of a pure white colour generally ramified, lamellated, sometimes solid, and sometimes tubular, their consistence being dense. These are the consequences of inflammation of a secreting surface. The case is minutely related.

There are also cases of *Thickening and Ulceration of the Membrane of the Larynx*, the clinical observations upon which may be consulted with advantage by the junior practitioners. The *Peripneumony of Children* also forms a subject of consideration in this volume. This disease was of unusual frequency in the winters of 1802-3-4; and Dr. Cheyne particularly describes it as occurring in early infancy, when it is most severe, though he has seen it fatal to a girl of nine years of age. A few remarks on *Peripneumonia Notha*, conclude the volume.

In 1812, Dr. Cheyne published a volume of *Cases of Apoplexy and Lethargy: with Observations upon the Comatose Diseases.* The attention paid by Dr. Cheyne to the subject of Hydrocephalus, necessarily directed him to the pathology of the brain under other conditions. The study of those

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productive of coma form the objects of the present work, which may be looked upon as entirely clinical. He remarks, that in apoplexy he has never witnessed the rupture of any considerable branch of a blood-vessel; and that in all the instances in which he has seen the extravasation of blood on the surface of the brain, it has proceeded from a rupture of its substance. His investigation of the appearances observed upon the dissection of cases of this disease is minute and satisfactory, and he draws the following conclusion:

"That the bleeding does not depend on erosion, nor is it owing to aneurism, nor ossification, but to a great and simultaneous action of the smaller arteries of a hemisphere, or of the whole brain; an action, which, strong as these arteries are, they in general are unable to bear without a rupture of their coats."

Among the premonitory signs of apoplexy, Dr. Cheyne enumerates—muscæ volitantes, tinnitus aurium, and various modifications of vertigo; epistaxis and a feeling of weight or tightness, or a tensive pain across the forehead, or painful throbbing on either side of the tuberosity of the os occipitis; a flushing of the countenance and heaviness or wateriness of the eyes; also temporary fits of blindness, and unusual flashes of light of a bright or shining redness; loud and discordant noises, like the boiling of an immense cauldron, or like the roaring of the sea, or the clamours of an unruly crowd; restless nights, anxiety, palpitations of the heart and incubus. Sometimes, however, the patient is lethargic, his articulation indistinct, and his mental energy altogether defective. Slight paralytic affections, weakness of the muscular system, and spasms of particular muscles, with a numbness in the course of some particular nerves.

The occurrence of cases of *serous apoplexy* are so rare that their existence has been doubted; and Dr. Cheyne says that he has only observed the appearances of serous apoplexy in one case, among all his numerous dissections. The appearances observable on dissection of the cases of *sanguineous apoplexy* are such as to demonstrate the high excitement of the vessels of the brain; and the means to be adopted to diminish this, and unload the vessels, must be admitted to be chiefly blood-letting. Dr. Cheyne has laboured hard to remove the objections which have been urged against this practice, and his statement is entitled to the most attentive consideration. The connexion between apoplexy and lethargy is intimate, though by no means constant—the latter often exists without loss of sensation or voluntary motion. In lethargic cases, Dr. Cheyne shows that the effusion is princpially of serum on the surface of the brain, the tunica arachnoides is opake, and there exists also other marks of excitement in the organ.

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The Epidemic Fever which raged so violently in various parts during the years 1817-18, and 19, has been most amply recorded by different writers. Dr. Cheyne united with Dr. Barker, the secretary to the General Board of Health in Ireland, to give an account of it as it appeared in that kingdom, and to give an Historical Sketch of the Fevers which were Epidemical in Ireland during the last and commencement of the present century, particularly as the disease appeared in the years above mentioned. The work, which is arranged in 2 vols. 8vo., was published in 1821, and is entitled *An Account of the Rise, Progress, and Decline of the Fever lately Epidemical in Ireland, &c.*, and contains communications from physicians resident in various parts of the country, giving accounts of the symptoms by which it was characterized, and the modes of treatment found to be most beneficial. These accounts form a very valuable medical topography of the sister kingdom, a subject to which sufficient attention has not hitherto been paid. The work was written under the immediate sanction of the government, and contains all the official papers connected with the subject.

The above form the distinct works of Dr. Cheyne; but he contributed largely to the Dublin Hospital Reports, to the Edinburgh Medical and Surgical Journal, and to the Cyclopædia of Practical Medicine.

The Dublin Hospital Reports contain ten papers by Dr. Cheyne:—

1. (Vol. I. p. 1.) *Report of the Hardwicke Fever Hospital, for the year ending on the 31st March,* 1817. Dr. Cheyne's connexion with the House of Industry gave to him opportunities for studying the nature of fever. His description of the disease has been characterized as being "in the true spirit of Sydenham." He has detailed also the modes of treatment, and given an account of those in which his practice was unsuccessful. The *post-mortem* examinations form a valuable contribution to pathological knowledge.

2. (Vol. I. p. 259.) *A Case of Melæna, with Observations on the Alternate Excess of Morbid Action in the Mucous and Serous Membranes.* The black matter in these cases has been ascertained to be a transudation from the minute arteries of the inner surface of the stomach and alimentary canal. Dr. Cheyne checked the hæmorrhage by the exhibition of turpentine; but effusion into the cavity of the peritoneum succeeded, and in five days fluctuation was manifest. This symptom was relieved by the blue pill and squills—a mercurial effect was occasioned, and a purgative was therefore given—it produced a return of the hæmorrhage, which proved fatal. The effusion within the peritoneum was nearly removed. The case is strikingly illustrative of the alternate excess of morbid activity of the

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mucous and serous surfaces and the transfer of disease from one texture to another.

3. (Vol. I. p. 273.) *Of Jaundice, unaccompanied with any discoverable disease of the Liver, or turgescence or obstruction of the Biliary Ducts.* Dr. Cheyne thinks this may be looked upon as a case of *typhus icterodes*, a disease so rare, that in at least 1500 cases of fever, he had seen only two instances. The boy, the subject of it, had been discharged from the wards of the House of Industry.

4. (Vol. I. p. 315.) *On the Virtues of James's Powder in the Apoplectic Diathesis.* The advantage of sudorifics in relieving general plethora is universally admitted.

5. (Vol. II. p. 1.) *Report of the Hardwicke Fever Hospital, for the year ending on the 31st March, 1818, including a brief account of an Epidemic Fever in Dublin.* The labours of Dr. Cheyne may be duly appreciated by a perusal of this report. Independently of the observations made by the clinical clerks under the direction of Dr. Cheyne, he himself made daily reports of nearly three hundred cases of fever, and superintended many of the dissections of the fatal instances.

6. (Vol. II. p. 216.) *Case of Apoplexy, in which the fleshy part of the Heart was converted into fat.* This organic change is of rare occurrence; few cases are upon record. I have only met with one in an immense number of *post-mortem* examinations.

7. (Vol. III. p. 1.) *Report of the Whitworth Hospital, containing an account of Dysentery, as it appeared in Dublin in the latter end of* 1818; *with a brief account of that Disease, as it appeared at Limerick in* 1821. This is a brief history of the appearance of dysentery in Ireland to the end of the year 1818, and gives a particular account of that which raged during that year and the beginning of 1819. Ireland seems to have always been very liable to visitations of dysentery; but the improvements introduced into the barrack system have tended greatly to reduce this scourge in the last twenty years. The dissections of those in whom the disease proved fatal were most carefully made, and the preparations are arranged at the Whitworth Hospital. They are to be divided into two classes:—those in which the intestine is thickened and those in which that change has not taken place. The mucous membrane in various states of increased vascularity, without abrasion, or ulceration—the deposition of coagulable lymph—the simple abrasion—the ulceration, and the union of ulceration with a deposition of lymph, are all to be found in the first class.

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The second consists of simple abrasion—ulceration—sphacelation. No one mode of treatment can be applicable to such varieties of disease; and in the course of the season different means were pursued, for an account of which the reader must consult the report itself.

8. (Vol. IV. p. 123.) *Medical Report on the Feigned Diseases of Soldiers, &c.* This subject is considered under the following heads:—

1. "The diseases which are most generally feigned.
2. "The methods which the malingerer adopts to deceive the medical officer.
3. "The best means of detecting the fraud.
4. "The most successful way of treating malingerers, and preventing the extension of their fraudulent practices in regiments."

It is altogether a very curious and interesting paper.

9. (Vol. IV. p. 252.) *Cases of a Fatal Erethism of the Stomach, with Observations.* Four instances of a very rare disease occurring in different members of the same family.

10. (Vol. V. p. 351.) *On Small and Frequently repeated Bleedings in Hæmoptysis and Incipient Phthisis.* The applicability of this mode of treatment is illustrated by a reference to several cases.

Dr. Cheyne contributed two papers to the Edinburgh Medical and Surgical Journal. The first on a *Case of Bronchial Polypus* has already been noticed; the second consists of *Observations on the Effects of Purgative Medicines.** These are displayed in the relation of a case of nervous irritation producing violent fits, which were relieved by the exhibition of daily large doses of aloes and gamboge. Dr. Cheyne makes many observations upon the different powers of cathartics, and their adaptation to varieties of constipation.

To the Cyclopædia of Practical Medicine, edited by Dr. Forbes, Dr. Tweedie, and Dr. Conolly, Dr. Cheyne contributed five articles. 1. *Croup.* 2. *Epilepsy.* 3. *Epidemic Gastric Fever.* 4. *Laryngitis.* 5. *Wakefulness.* The paper on *Croup* is a perspicuous and well condensed monograph of the disease. That on *Epilepsy* is equally instructive, and strongly urges the practitioner to review all the circumstances attendant upon this *opprobrium medicorum*, and endeavour, at least, to obtain new and more effectual palliatives. To Dr. Tweedie's able article on Fever, Dr. Cheyne contributed that portion which especially relates to the *Epidemic Gastric Fever*, which was so prevalent in 1799-1800, again in 1816, and a third time in 1826-7.

* Vol. IV. p. 310.

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The observations already made on his joint production on Epidemic Fever with Dr. Barker, as it appeared in Dublin, will assure the reader of the value of this communication. In less than ten columns, all the circumstances most important, which relate to the disease, are fully stated, and the best modes of treatment pointed out.

The paper on *Laryngitis* is no less entitled to regard. His researches into the Pathology of the Membrane of the Larynx and Bronchia are here condensed—the subject discussed in all its varieties—the sources of danger pointed out, and the rational modes of cure or relief set forth. Dr. Cheyne's professional candour is strongly evinced in this article, by his acknowledgment of a paper in the 17th volume of the "Transactions of the Medico-Chirurgical Society," by Mr. Wood, condemning a proposal formerly made by Dr. C. to introduce a trochar and canula, without previous incision, into the trachea in some cases of this disease. He quotes the passage in which his suggestion reprobated as "an *amende* for the inconsideration that led him to the proposal of an operation which is so objectionable."

The last paper, that on *Wakefulness*, is an important paper connected with symptomatology. In this communication, Dr. Cheyne says he knew a person who took snuff during sleep, and who, when his snuff-box was removed from under his pillow, where he kept it, after betraying dissatisfaction, invariably awoke. Dr. C. points out the requisite effects of sleep, and the influence excited by it over the vital functions; and having stated some general propositions on this head, he proceeds to that of wakefulness, as symptomatic of either acute or chronic disease. No one, I regret to say, could be better qualified, from personal experience, to write upon this subject. The wakefulness attending his own condition was such, that to obtain repose, he had several beds in his room, and was accustomed to remove from one to another, thus ardently seeking that which the poet has so well designated

"Tir'd Nature's sweet restorer—balmy sleep!

* * * *

Man's rich restorative; his balmy bath,
That supples, lubricates, and keeps in play,
The various movements of this nice machine,
Which asks such frequent periods of repair."

YOUNG.

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WILLIAM C. CRUIKSHANK, F.R.S.

&c. &c. &c.

"Accuracy is mechanical, but Discovery marks Genius."

WILLIAM CUMBERLAND CRUIKSHANK was born in Edinburgh in the year 1745. His father was an Examiner in the Excise, and he was named Cumberland in compliment to the Hero of Culloden, a name which, however, he seldom affixed in his signature. Having gone through the preliminary course of education afforded by a provincial school, he was placed at the University of Edinburgh, where he distinguished himself by natural powers as well as by great application. His memory was of extraordinary power, and with the exception of some aberrations occurring under disease, to be presently noticed, preserved its character for tenacity throughout life. The opinion formed of the talents of Mr. Cruikshank induced his father to remove him, at the age of 18, from Edinburgh to Glasgow, with the view of devoting him to the church. Lord Dundonald presented him with a Bursary or exhibition, and he resided at the University for four years, went through the classes of Philosophy, and took the degree of Master of Arts in 1767. His habits of study, and his zeal in the acquisition of knowledge, were remarkable; and having solely by his own personal application made himself familiar with French and Italian, he was enabled to give lessons in these, at that time rare languages, to the students. The Provost Buchanan selected him as tutor to his family, and he afterwards resided with Lord Dundonald in a similar capacity. The Bursary presented to him by Lord Dundonald obliged him to study Divinity; and he publicly delivered a Probationary Sermon in the Divinity Hall of the University.

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The sacred functions to which his father had destined him did not however accord entirely with his inclination; and entertaining some scruples upon the subject, he was peculiarly fortunate in meeting with an able and a kind friend in Dr. Moore, to whom he revealed the repugnance he felt to the prosecution of theological studies, and the predilection he possessed for those of a medical character. During the vacations he spent much of his time with Mr. Montgomery, a Surgeon at Beith, whose son was a student in physic at the College of Glasgow, and from this association he imbibed a strong propensity to the study of Anatomy and Physic. We have the authority of Mr. Thomas, to whose notice of his father-in-law, as delivered in the Hunterian oration for 1827, I am indebted for many of the particulars contained in this memoir, to state that in Dr. Moore, Mr. Cruikshank met with one who encouraged rather than dissuaded him from the study of physic, and gave him every assistance in his power in the attainment of the object of his selection and wishes. Under the roof of this gentleman he studied surgery and pharmacy for three years, and had the advantage of an excellent medical library. An opportunity soon offered, by which Mr. Cruikshank's talents were to be called into operation. Dr. William Hunter and Mr. Hewson had separated from each other in their department of anatomical teaching. Dr. David Pitcairn wrote to the College of Glasgow for some one who could be recommended to the Doctor to supply Mr. Hewson's place; and through the kind intervention of Dr. Moore, Mr. Cruikshank was nominated: he therefore arrived in London in 1771, and was immediately appointed by Dr. Hunter to the care and arrangement of his library and museum. He gave himself up entirely to the object for which his passion was the greatest, that of the study of anatomy; attended the lectures given by the Hunters and Dr. Fordyce; and pursued the science with extraordinary activity, even to the injury of his health. A hæmorrhage from the lungs obliged him to desist, and to remove to a better atmosphere. His constitutional powers were naturally good, and by a few months' absence from London, and attention to diet, he was enabled to resume his place in the dissecting room. He not only gave the demonstrations; but he occasionally delivered the lectures, when Dr. Hunter's avocations prevented him from being present. In the memoir of Dr. Hunter I have dwelt upon the elegance and power of his lectures, and detailed the satisfaction derived by his pupils from the efforts of their teacher; it is, therefore, no little praise of Mr. Cruikshank to say that all who listened to his discourses, were not only satisfied with the manner in which he treated the subject of the lecture, but were delighted also by the elegant and classical illustrations with which they were frequently elucidated. Dr. Hunter was indeed so perfectly satisfied with

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the exertions of Mr. Cruikshank, that, at a subsequent part of his career, he admitted him to a participation in the benefits arising from the lectures, and at his death associated him with the highly esteemed Dr. Baillie. Mr. Thomas gives evidence to Mr. Cruikshank's enthusiasm for anatomical science: "Like John Hunter, (he says) he considered every hour lost that was not in some way accessory to its advancement, and his recreations were simply a change from one branch of it to another."

In addition to Mr. Cruikshank's engagements in the theatre and the dissecting room, he was much occupied in practice. He gave advice to a very numerous class of the poor who applied at his house, and Mr. Thomas says the numbers that flocked to him were perfectly incredible. At this period, public dispensaries were not common—hence the applications to him in private were so great. He treated all with great kindness: "his door was never closed against sickness or sorrow;" and by his benevolence he showed himself to be, what Dr. Samuel Johnson had described him in the phrase of his own country, "a sweet-blooded man." In the illness which deprived the world of the great lexicographer and moralist, he was attended by Mr. Cruikshank, and the Doctor was very grateful to him for his kindness and assiduity. One circumstance connected with this professional engagement I recollect to have heard from my friend the late Rev. Thomas Maurice, the author of the Indian Antiquities, who had early in life been particularly noticed by Dr. Johnson. To mark the anxiety for life entertained by this great man, and in allusion to Mr. Cruikshank having scarified his limbs to evacuate the water that had collected in the cellular membrane, the Doctor called out to him, "I want life, and you are afraid of giving me pain—deeper —deeper." And so dissatisfied was Johnson because his surgeon would not rashly employ his lancet, that he is reported to have scarified himself after Mr. Cruikshank had left him, and thereby lost much blood and accelerated his dissolution.*

* In Sir John Hawkins's Journal of the last fortnight of Dr. Johnson's life, inserted by Mr. Croker in his edition of Boswell's Life of Johnson, the above circumstance, from the narration of his servant Frank, is thus recorded:—

"That at 8 in the morning of the preceding day, (12th Dec. 1784,) upon going into the bed-chamber, his master, being in bed, ordered him to open a cabinet, and give him a rawer in it; that he did so, and that out of it his master took a case of lancets, and choosing one of them, would have conveyed it into the bed, which Frank and a young man that sat up with him seeing, they seized his hand, and entreated him not to do a rash action: he said he would not; but drawing his hand under the bed-clothes, they saw his arm move. Upon this they turned down the clothes, and saw a great effusion of blood, which soon stopped; that soon after, he got at a pair of scissors that lay in a drawer by him, and

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Johnson presented a set of his "Lives of the Poets" to Mr. Cruikshank, and says, "I beg your acceptance of these volumes as an acknowledgment of the great favours which you have bestowed on, Sir, your most obliged and most humble servant, Samuel Johnson."—Mr. Cruikshank appears from the following letter to have been a Candidate for the Professorship of Anatomy at the Royal Academy.

DEAR SIR,

The gentleman who waits on you with this is Mr. Cruikshank, who wishes to succeed his friend, Dr. Hunter, as professor of Anatomy in the Royal Academy. His qualifications are very generally known, and it adds dignity to the Institution that such men are Candidates.

I am, Sir,

Your most humble Servant,

To Sir Joshua Reynolds. SAMUEL JOHNSON.

In a codicil to his will Dr. Johnson left to his physicians, Dr. Brocklesby, Dr. Butler, and Dr. Heberden, also to Mr. Cruikshank, and to his apothecary, Mr. Holder, each a book at their own election to keep as a token of remembrance.

Mr. Cruikshank enjoyed intimacy with most of the literary men of his day, and merited their esteem. His memory enabled him to enliven his discourse by apt and elegant quotations from writers of taste, with whose works he was

plunged them deep in the calf of each leg; that immediately they sent for Mr. Cruikshank and the apothecary, and they, or one of them, dressed the wounds; that he then fell into that dozing which carried him off; that it was conjectured he lost 8 or 10 ounces of blood; and that this effusion brought on the dozing, though his pulse continued firm till 3 o'clock. "That this act was not done to hasten his end, but to discharge the water that he conceived to be in him, I have not the least doubt. A dropsy was his disease: he looked upon himself as a bloated carcass; and, to attain the power of easy respiration, would have undergone any degree of temporary pain. He dreaded neither punctures nor incisions; and, indeed, defied the trochar and the lancet; he had often reproached his physicians and surgeon with cowardice: and when Mr. Cruikshank scarified his leg, he cried out, "deeper, deeper; I will abide the consequence: you are afraid of your reputation, but that is nothing to me."

"Oh, our life's sweetness!
That we the pain of death would hourly bear,
Rather than die at once!"

KING LEAR.

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well acquainted, so that his conversation became peculiarly delightful. To one so gifted how melancholy is the reflection that he had such a "morbid susceptibility of nerve," as to cast a gloom over the days they were destined to brighten.* Mr. Thomas feelingly laments that the "close and intense application, the sedentary habits, by which superiority in most sciences is acquired, should engender a disease which blights the fairest prospects; making those retreat who are best qualified to advance; and those to distrust who ought to have most confidence in themselves; and this (he adds) is the more to be lamented, as this physical infirmity is but too apt to foster the moral one,—a suspicious temper,—a heavier misfortune cannot afflict human nature; pervading alike public and private life, and under the influence of which the best intentioned actions are misconstrued—affections alienated—friendships dissolved!" This peculiar disposition, or nervous malady, had assailed Mr. Cruikshank from his youth; and by it Mr. Thomas thinks his pre-eminent talents and many noble qualities were occasionally obscured and their course impeded. To this disposition, indeed, he does not hesitate to attribute Mr. C.'s want of success as an operative surgeon. "The head (says he) had every requisite for the most difficult operations; but the tremulous hand failed often in the execution of them. This, of course, prevented his elevation to that rank in the profession to which his education and abilities so fully entitled him."

Mr. Cruikshank's life was devoted to anatomical and physiological pursuits. When Dr. Hunter died, his museum was bequeathed, under the direction of trustees for the use of his nephew, Dr. Baillie, and in case of his death to Mr. Cruikshank, for 30 years, at the expiration of which time it was to go to Glasgow, where it at present remains. Mr. Cruikshank, in anticipation of the removal of the museum, commenced a collection of anatomical preparations, sufficient for the purpose of illustrating his lectures and demonstrations. Mr. Wilson assisted him materially in this object; and the collection, at the decease of Mr. C., was disposed of for the benefit of his family to the Russian Government, and is now at St. Petersburgh. The death of Mr Cruikshank occurred on the 27th June, 1800, at which time he had reached the age of 55. This event was sudden. For some time previous he complained occasionally of a violent pain in his head, accompanied with a peculiar smell in his nose. On the morning of his death he was found evidently in an apoplectic state. His friends, Dr. G. Fordyce and Dr. Pearson, were called in by Mr. Thomas to his assistance; but he died before 9 o'clock. Mr. Thomas gives the following interesting narration of the circumstances:

* See Mr. Thomas's Hunterian Oration.

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"The immediate cause of his death was apoplexy, which he had always foretold would terminate his existence. He was led to prognosticate this event from the circumstance, that whenever he stooped forward, or, in short, when from any cause the free return of the blood from the head was interrupted, he was conscious of a peculiar thrilling sensation, in the superior surface of the left hemisphere of the brain; and at this point it was found, upon examination after death, the mischief had actually taken place. This portion of the brain had the appearance of having been torn; and the effusion of blood in the surrounding parts was very considerable. There were no other marks of disease within the cranium, excepting a deposit of osseous matter adhering to the falciform process of the dura mater.

"He had also laboured under many other symptoms, denoting cerebral disturbance; and as these bore so strong a resemblance to a similar case in a near relation of his own, I am induced to enumerate a few of the most important, and to elucidate the subject, as far as the evidence of two cases will admit, occurring at the same time, and which were repeatedly and most carefully investigated.

"As friends they were almost in the daily habit of communicating with each other, and their similar distressing sensations, were, as may be imagined, the frequent topic of conversation. They were both men of lively imagination and quick parts; their habits of life had been so far similar, that the mind had been actively employed in both, though in very different situations.

"They were each subject to an entire loss of memory; which occasionally occurred in the midst of the most animated conversation, as well as when the mind was in a state of quietude. This suspension of intellect was merely transient; and its restoration was equally sudden. The sense of smelling was also very obtuse; commonly the strongest volatiles would scarcely affect the organ; yet whenever any circumstance occurred to excite painful emotions in the mind, they were liable to be assailed with, and suffered the most poignant distress from, the sensible impression of odours, which they invariably described as horribly offensive. Indeed the pallid face and hurried state of the whole system very clearly denoted the intensity of their sufferings. They were subject to frequent and violent fits of sneezing; and Mr. Cruikshank often remarked, that the organ of smell must have numerous unknown nerves in its composition, to explain the complexity of his feelings.

"A very short time only intervened between the decease of these relatives; similar in their death, as in the precursory symptoms. Mr. C. was the survivor; and investigated with careful and deep attention the state of parts within the cranium. Here blood was found effused to a considerable extent in the left hemisphere; and a bony deposit was attached to the anterior portion of the falciform process.

"The resemblance in each case was very remarkable; but in neither did the most careful examination detect the slightest alteration in the natural and healthy appearance of the structure of the olfactory nerve."

Mr. Thomas, who married Mr. Cruikshank's eldest daughter, characterizes him as "a man of more than ordinary stamp; one whose talents, and numerous excellencies, inspired a strong and devoted attachment; whose virtues were warm from the heart; whose errors were from the head alone, and so

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mingled with, and allied to, estimable quantities, as only to excite a more lively interest in his welfare." "No one," he says, "could have been more perfectly disinterested; or less mercenary and selfish; nor have entertained a loftier disdain for every species of artifice and deception."

As an anatomist and physiologist Mr. Cruikshank's fame will live as long as science is cherished. He has illustrated many obscure and difficult subjects; and those who have followed in his steps have duly acknowledged his merit and accuracy. He received an honorary degree of Doctor in Physic from the University of Glasgow, and he was also a member of the Imperial Academy of Vienna. In 1797 he was admitted a Fellow of the Royal Society. The publications of Mr. Cruikshank are few in number; but they are of intrinsic excellence. His earliest papers, though not printed until a late period, are his communications to the Royal Society.

1. (Vol. LXXXV. p. 177.) *Experiments on the nerves, particularly on their reproduction; and on the spinal marrow of living animals.* This paper was communicated to the Royal Society by John Hunter, in 1776. The nerves upon which the experiments were made, were the par vagum and the intercostal. A plate is given to represent the parts at which the nerves had been divided, and the quantity lost by excision, the mode of reunion of the divided nerves, and the quantity regenerated after the loss of substance. This paper had been deposited in the archives of the Royal Society for many years, and was brought forth in consequence of some experiments of a similar nature, and productive of similar results, which had been laid before the same learned body, by Dr. Haighton, whose paper appropriately follows that of Mr. Cruikshank in this volume of the Transactions. Mr. C. alludes to these experiments in a note affixed to page 88 of his tract on the "Insensible Perspiration:"—

"These experiments were made for another purpose, by which I discovered the independence of the heart's motion on its nerves, as well as the reunion after division, and the regeneration after loss of substance in the nerves themselves. I wrote a paper on this subject a long time since, which the late Mr. John Hunter, to whose memory and talents I am always proud to pay my tribute, presented to the Royal Society, but it was not then printed; I think Mr. Hunter gave me for a reason, that it controverted some of Haller's opinions, who was a particular friend of Sir John Pringle, then president of the Royal Society. Another gentleman has lately made experiments on the same subject, and has also presented them to the Royal Society. Upon hearing these read at the Society, Mr. Home, with that intelligence of anatomical subjects that distinguishes his character, and the school he was bred in, remembered my experiments, though made nearly twenty years ago. The present president of the Royal Society, who. fortunately for mankind, prefers

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the promulgation of science to Haller or any other man, on being made acquainted with this circumstance, has caused the paper on those experiments to be printed in the Philosophical Transactions for 1794."

2. (Vol. LXXXVII. p. 197.) *Experiments in which, on the third day after impregnation, the Ova of Rabbits were found in the Fallopian Tubes; and on the fourth day after impregnation in the Uterus itself; with the first appearances of the Fœtus.* This paper was communicated to the Royal Society by Mr. Everard Home, in 1797; and it is not a little singular that it should, like the preceding one, accompany a communication on the same subject also, by Dr. Haighton. The experiments had reference to those of De Graaf, and were made upon rabbits, at the expense of Dr. Wm. Hunter, in 1778. They were twenty-nine in number, and are here specifically detailed. The general conclusions drawn from them are as follow:—

1. The ovum is formed in, and comes out of the ovarium after conception.

2. It passes down the fallopian tube, and is some days in coming through it.

3. It is sometimes detained in the fallopian tube, and prevented from getting into the uterus.

4. De Graaf saw one ovum only in the fallopian tube, "in oviductus dextri medio *unum*." I saw thirteen in one instance, five in another, seven in another, and three in another; in all, twenty-eight.

5. The ovum comes into the uterus on the fourth day.

6. De Graaf did not see the fœtus till the tenth day; I saw it on the eighth.

7. These experiments explain what is seen in the human female.

In 1778, Mr. Peter Clare, a surgeon in London, residing in Chancery Lane, published an account of a method of curing the Lues Venerea by introducing Mercury into the circulation, not by the ordinary frictions with mercurial ointment; but by the application of Calomel, in the form of powder, rubbed on the inside of the cheeks. Mr. C.'s object appears to have been to effect, in what he conceived a more immediate manner, the salivary glands: but the practice has long been discontinued, from the doctrine of absorption being more satisfactorily understood. At this period, a knowledge of this function may fairly be said to have been in its infancy; and to the labours of Mr. Cruikshank are attributable much of the information we now possess upon the subject. Mr. C. warmly espoused

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the practice of Mr. Clare, which was also approved by Dr. Hunter; and Mr. Cruikshank printed, in the second edition of Mr. Clare's treatise upon this subject, a long letter, which afterwards appeared in a distinct form, under the title of "*Remarks on the Absorption of Calomel from the internal surface of the Mouth, &c.* In the preliminary sketch to this publication, Mr. Cruikshank observes, that "all the surfaces and cells of the human body, and most probably of every living body, are also absorbent, and take up not only *fluids*, but the minutely-divided particles of *solids* themselves." He proceeds to exhibit the proofs of this absorption, and refers largely to ancient writers in illustration of the process, and he refutes some of the absurd notions that have been put forth as instances of absorption.

"Boerhaave," he says, "quotes, in favour of human absorption, the story of Democritus, who was reported to have kept himself alive three days on the smell of new bread. Boerhaave does not inform us how long Democritus had previously fasted before he began to smell the bread. If he had not fasted at all before, it does not, in my opinion, prove absorption; but rather, that a man may live three days without tasting anything; which certainly may be believed. If he had not tasted anything for three or four days before, it would look as if something nutritious, and which was vapour in the bread, had been absorbed. The Turks, it is true, are said to travel fifty miles a day on a bit of opium held in the mouth; and feel strong and well, merely in consequence of that excitement which the opium produces in the brain. Madmen, whose brains are excited from some internal cause, can live long without food; but it would be inferring too much to conclude, that the mere smell of new bread could produce a similar excitement in the brain, or similar effects on the body."

Having considered the absorption of both fluid and solid substances, he proceeds to show what are the parts by which this process is effected; and thus enters upon a consideration of the absorbent glands, the lacteals and the lymphatic vessels. He gives a short view of the discoveries of Aselli, Rudbeck, and others; and details their opinions, and those of Bartholin, Willis, Haller, Hunter, &c., on the question of absorption by those vessels and the red veins. He embraces the opinion of the Hunters, and asserts that the red veins do not possess any absorbent power. Mr. Cruikshank then proceeds to remark upon the skin and its pores, which leads him to the subject of the Insensible Perspiration, respecting which, he details several experiments of great interest, and which formed the basis of another work, to be noticed in the order in which it was published. From this digression, he returns to the subject of absorption, and endeavours to give some account of the manner in which it begins, and is afterwards carried on. His opinions are thus stated:—

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"The absorbents have fibrous coats, are irritable and muscular; muscular parts in general stimulated contract, and having contracted, if in a sound state, must from their own nature be presently relaxed: whatever is to be absorbed, is applied to the absorbing surfaces, either by the pressure of the external atmosphere; by the peristaltic motion of the stomach and intestines; by the motions of respiration, pulsation of neighbouring arteries; or, in short, by the contraction of muscular parts in general.

"This matter coming into contact with the orifice of an absorbent, stimulates it; the first effect of this stimulus is to make it contract; it of course takes up less space, and the fluid, or whatever it is, rushes forward; the absorbent orifice now dilating, forms a vacuum, the fluid must therefore rush in, and stimulating it a second time, obliges it to contract. This contraction not only propels what has entered the absorbent, but makes room for a fresh quantity to come forward; and in this way, perhaps, is the matter to be absorbed taken up from surfaces."

A consideration of the substances capable of being absorbed, the surfaces upon which the absorption is most readily effected, the time necessary for the operation, and the means by which it can be accelerated, follow. Mr. C. then proceeds to consider, more especially, the absorption of Calomel from the inside of the mouth, and shows, from analogy, that it can be so absorbed—that the surface is favourable to it—and that its advantages are to be found in its being less apt to irritate the stomach and intestines.

The tract I have just noticed, was, according to Mr. Wilson, as expressed in his Introductory Lecture, in October, 1800, written at the desire of Dr. Hunter, and at a time when Mr. Cruikshank was labouring under ill-health. The anatomical and physiological observations are therefore much dispersed throughout it; and Mr. Wilson had heard Mr. C. to say, after his recovery, that he wished it had never been published. It, however, contains many most ingenious and useful observations. In a postscript, the author apologizes for the style of it, and observes upon some colloquial inaccuracies and apparent haste of composition. And he concludes with the following just remarks:—

"To those who love their own fame and reputation better than they do the science they cultivate, hasty communications will appear very wrong; but to those who think only of the improvement of science, and who would be happy, at any time, to give up their most favourite ideas, for new ones better founded, this letter will, I hope, need less excuse.

"The publication of new opinions in any science have unquestionably this good effect: they establish facts on a firmer basis. For if the new opinions are ill-founded, the detection of their errors, serves to confirm the truth of the old opinions; if they are well-founded, they advance science, and root out error; and it is by these means, that we approximate to perfection.

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WILLIAM CUMBERLAND CRUIKSHANK, F.R.S.

"I know men of real merit, whose former valuable observations have in time escaped their own memories, and been for ever lost to the public, from an excess of delicacy in publishing their opinions to the world. Every respect is undoubtedly due to the public: no man should come before them negligently and unprepared: but if his intentions are the improvement of useful science, the good-natured part of mankind will forgive the want of ornament, where they find information."

In 1786, Mr. Cruikshank published the work upon which his professional merit principally stands—a work which has received the approval of all subsequent anatomists and physiologists, and fairly takes its position among the standard volumes of Medical Science. This was entitled *The Anatomy of the Absorbing Vessels of the Human Body.* A second edition, with many additions, was published, in 1790. It has been translated into French, Italian, and German.* The work is divided into two parts: the first contains the history, structure, and properties of the absorbing vessels and their glands, in those animals in general, in whom they have yet been found; and the second, the situation and number of the absorbent glands, and the particular distribution of the vessels, in the human body. The subject noticed in the preceding pages, is, in this work, treated of in the most ample and satisfactory manner; and the anatomical part illustrated by well-executed plates. There is also an engraving of a remarkably enlarged thoracic duct of a size nearly equal to that of the aorta. The history of the individual was not known, nor the cause of such a variety apparent.

The work was originally undertaken at the suggestion, and carried on under the direction, of Dr. Hunter, who was in the habit of alluding to the anatomy of the lymphatic system as developed by himself, his brother, John Hunter, Mr. Hewson, and Mr. Cruikshank. It was intended to be illustrated by a series of accurate engravings; but the death of Dr. Hunter, and the different arrangement of his fortune, precluded this object from being effected. Mr. Cruikshank's labours form, undoubtedly, the most extensive portion in the whole history of the absorbents; and drawings from his preparations were made, from which the plates were to have been executed. In the introduction to the work, Mr. C. points out the mode adopted by him to obtain accuracy; and shows that the reduced figure, giving an entire

* The French translation was made by M. Philippe Petit-Radel, and published at Paris, in 1787, in 8vo; the German, by Christian Frederick Ludwig, and published at Leipsic, in 1789, in 4to.; with plates and notes. I have never seen the Italian translation.

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view of the absorbents of the human body, is arranged upon an authorized and authentic scale. The author gives a history of absorption generally; he defines it to be in animals, "a property in certain vessels of their bodies by which they take up the fluids in which their orifices are immersed, and carry them into the blood-vessels." He inquires into the opinions entertained by several physiologists, as to transudation; and gives his reasons for differing from men so eminent as Dr. Hunter, Albinus, Meckel, and Haller. He contends for the existence of organized orifices, and the mouths of exhalents opening out on surfaces. Vesications he regards as conclusive against transudation through the cuticle; and he looks upon the cuticle as placed by the hand of Nature

"to prevent the evaporation of such fluids as are in the cellular membrane, and are immediately in contact with the cuticle; for if these evaporate, the cells of the cellular membrane communicating freely with one another all over the body, they would be succeeded by fluids behind, and thus an immense waste of fluids would take place. For the same reason, Nature covers oranges, lemons, and fruit in general, with an analogous membrane: it is equally fine, and has this property at least of the human cuticle, of preventing transudation of cellular fluids. Every one may convince himself of this fact: by removing this membrane, the fluids quickly evaporate, and the fruit becomes shrivelled and dried. In short, nothing appears to me more evident than this fact, that in the living body there is no transudation of watery fluids: could it take place, there would be no such disease as a preternatural collection of fluid in any cavity, no such disease as dropsy; for the fluids transuding through membranes and cuticle, must pass from one cavity into another; from the thorax, in the hydrops pectoris, into the subjacent abdomen, and having there formed ascites, would soon transude and form œdema of the lower extremities, where, likewise, after some little time, it would transude through the cuticle, and these diseases would naturally cure themselves at last."

He proceeds to show that the ancients knew something of the property of absorbing in human bodies. Hippocrates and Galen attributed to the surface of the body, the power of inhalation, and exhalation, by means of vessels. Upon a knowledge of this, the Arabian physicians established an *endermic* mode of treatment, which has lately been attempted to be revived.* Mr. C. enumerates the experiments made by the moderns, to demonstrate the Venous Absorption of the ancients—a doctrine he minutely considers, and absolutely rejects. He enters upon a particular history of the lacteals and lymphatics; considers Eustachius as the first discoverer in this part of anatomy; and asserts, that he saw the Thoracic Duct in a horse, about the year 1563, and describes it in his treatise *De Vena sine pari*, as the *Vena*

* See Memoir of Dr. Sigmond.

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alba thoracis. This celebrated anatomist appears to have traced it from the subclavian vein downwards, where of course, from the ignorance of the art of injection in his day, he became bewildered and lost. Aselli traced the lacteals from the mesentery in a living dog, and distinctly pronounced their office. Veslingius first saw them in the human species.

Mr. C. points out the methods of discovering the lymphatics and lacteals, traces their origins, and treats particularly of their orifices. A case occurred to Mr. C., by which he had an opportunity of observing these in a very remarkable manner: it is detailed in a letter to Mr. Clare.

"A woman died suddenly, about four in the morning, after having been in pretty good health on the preceding evening. Her relations wished to know the cause of so sudden death; and the body was opened. The lacteals, on the outside of the intestines, and along the mesentery, were more turgid, with a firm coagulated chyle, than I had ever seen them."

The observations he then made, were:

1. "Many of the villi were so full of chyle, that I saw nothing of the ramifications of the arteries or veins; the whole appeared as one white vesicle, without any red lines, pores or orifices whatever.

2. "Others of the villi contained chyle, but in a small proportion; and the ramifications of the veins were numerous, and prevailed, by their redness, over the whiteness of the villi.

3. "In some hundred villi I saw the trunk of a lacteal, forming or beginning by radiated branches. The orifices of these radii were very distinct on the surface of the villus, as well as the radii themselves, seen through the external surface, passing into the trunk of the lacteal; they were full of a white fluid. There was but one of these trunks in each villus.

4. "The spongy cavity, which Leiberkuhn speaks of, appeared clearly to be the common cellular membrane, connecting all the arteries, veins, nerves, and lacteals together.

5. "The orifices on the villi of the jejunum, as Dr. Hunter himself said, (when I asked him, as he viewed them in the microscope, how many he thought there might be,) were about fifteen or twenty on each villus; and in some I saw them still more numerous."

The structure of the lacteals and lymphatics next engages his attention, and he treats of their coats, irritability, muscularity, vasa vasorum, sensibility, and their valves. He then discourses on the lymphatic glands, which he looks upon to be as much a part of the absorbent system as the ganglions

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are of the nervous system. He gives a general description of their structure and situation, and then proceeds to consider the ramifications, anastomosis, number, and size of the absorbent vessels; points out the situation and course of the larger absorbents, and traces them to their terminations. These subjects, which relate to the structure and properties of the lacteals and lymphatics, being considered, the first part of the work terminates by a review of their different functions, by which the importance of the system in the animal machine may be estimated. The nature of the chyle and the lymph is investigated, and the process of absorption, together with the substances capable of being absorbed, entered into. This, viewed in connexion with various morbid states, is discussed in the most philosophical manner, and places Mr. Cruikshank's character, as a physiologist, in a very high point of view.

The second part of the work, gives the particular anatomy of the absorbent system, which, it cannot be denied, was never given completely by any previous anatomist. Various authors had described parts of the system, and, in some instances, there is reason to fear that imagination had more than its proper share in the display. Mr. Cruikshank's anatomy is a most faithful picture of the whole; and but little has been added, since his time, to the subject. His work, therefore, will continue to be held in estimation, and to form, on the subject of which it treats, a most satisfactory body of reference. It concludes in the following modest manner:—

"The reader will observe, that throughout this work I have often confessed ignorance, and said, 'why this is, I do not know.'—I think this confession much better than to attempt an idle hypothesis, which would convince nobody, and of which I myself should hereafter be ashamed. I shall, therefore, conclude with a quotation from Galen, who, in his book on the use of the parts of the human body, expresses himself to the following purpose:

"There is a certain length to which we may carry our researches; but if we attempt to go beyond that, we shall soon convince ourselves, that we neither understand our own imbecility, nor the great ability of Him who made us." *Το δε ὁπως εγενετο τοιουτον εαν επιχειρησης ζητειν ανασθητος φωραθήση καὶ τῆς σῆς ασθενείας και τῆς Δημιουργον δυναμεως.*

Experiments on the Insensible Perspiration of the Human Body, showing its affinity to Respiration, 1795: 8vo. The experiments detailed in this work, are reprinted from the "Letter to Mr. Clare." The "Anatomy of the Absorbent System," having formed a distinct publication, and these experiments omitted, Mr. Cruikshank thought proper to bring them forward in this separate shape. His object was to ascertain the quantity of watery

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vapour lost, in twenty-four hours, by insensible perspiration,—whether there was not something else in insensible perspiration besides the watery vapour, which spoiled atmospheric air,—and what affinity there was between the vapour of insensible perspiration, and the vapour of the lungs in expiration. He gives a description of the structure of the skin, and its several lamellæ, which he endeavours to show are more numerous than generally considered; and although he does not satisfactorily prove this, yet subsequent anatomists have so far agreed with him, as, in some instances, even to name a still greater number than he had stated.

"Was I to describe the different membranes which lie on the surface of the true skin, I should now say they were five, each of which I conceive is a cuticle, or an incipient cuticle. The first three are evidently cuticles, and the last two, most probably, are forming into cuticle, and, like the second and third, are to succeed the first, which is perpetually falling off in small portions, like scales; the only circumstance which seems to favour Leeuwenhoek's doctrine, that the cuticle is formed of scales."

The epidermis is found on all animals, and is capable of being renewed very quickly—some animals indeed shed their entire cuticle at certain seasons. And it is a remarkable fact, that that portion of it which covers the transparent cornea of the eye is also thrown off, and by this is satisfactorily demonstrated the continuance of the epidermis over these delicate parts, which might otherwise not have been suspected of being furnished with such a covering. I believe there is no exposed part of the body which has not its appropriate defence of cuticle: it extends over the conjunctiva—it spreads upon the tympanum—it lines the nose—and it enters the trachea, the œsophagus, the vagina, the urethra, and the rectum. Wherever, in short, the atmospheric air can gain admission, there cuticle is found, with the single exception of the enamel of the teeth, which part has no sensibility needing protection. Sir J. E. Smith has said of the epidermis, that "both in animals and in vegetables it forms a fine but essential barrier between life and destruction." It is, in short, a defence of the living parts beneath, from the decomposing power by which we are surrounded. It is semi-transparent and, quite insensible—it has, therefore, neither nerves nor blood-vessels. All the functions of the true skin are, notwithstanding, carried on through its texture: the perspiration is exhaled—impressions to the organs of touch are conveyed—absorption takes place through its substance. It is undergoing constant change, by the decay and falling off of portions of its surface, in the form of scales and patches, or still smaller particles. This constant change renders frequent ablution necessary, to keep the under

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portion in a fit state to admit of the functions of the true skin being carried on properly. Examination into its minute structure, has proved the statement of Leeuwenhoek to be incorrect, where he affirms that it is composed of scales like those of a fish. The scales are referable only to the parts worn away or rubbed off by friction, and requiring removal from the body. It is a part very readily renewed, and the process does not appear to disturb any of the functions of the system. Its growth may be observed at first, as a layer of thin transparent matter, which becomes thicker and thicker, and consequently more and more opake, by the addition of succeeding layers beneath. This mode of formation will explain the circumstance of its precise adaptation to the parts under its surface. I have stated that it has no blood-vessels or nerves, and that it is therefore devoid of sensibility. Different opinions are entertained as to its vitality. Bichât and Cuvier both considered it as not possessed of a visible organization, and that there did not appear to be any regular arrangement of its parts. Dr. Gordon declares it to be truly inorganized, or non-vascular. Mr. Lawrence states the epidermis to be incapable of sensation and all vital actions, extra-vascular, inorganic. He says "it is a protecting sheath for the finely-organized and sensible skin, and serves the further purpose of preventing evaporation, by which that organ would otherwise be inevitably dried. Thus the external surface of one living machine is in a manner dead; and objects applied to it act on the cuticular nerves through this insensible medium." Many consider it to be merely a crust or fibre, formed by exudation of the cutaneous vessels. The late Mr. Chevalier thought it nourished by some vessels ramifying on the cutis, and appropriated chiefly to this purpose. These vessels he has not demonstrated; but he states, that when stimulated, either by pressure, friction, or the application of certain irritating substances, they are soon excited to secrete a serous fluid underneath it, by which it is speedily, and sometimes very suddenly, as in scalds, loosened from the surface with which it was in contact; and in consequence of this separation it dies, and peals off. Mr. B. Cooper thinks its vitality is apparent from the important functions it assists in, from its growth, and from its death and separation when injured, like other structures in the body. In the effusion of serous fluid, as in the case of scalds, or a blister, it is found that the epidermis does not allow of its passage through its pores, which we know takes place with the ordinary perspiration, so that some change is effected in its texture by the violence which has been offered to it. This, however, is not to be regarded as a proof of its vitality—neither is the fact of the cuticle dropping off, after such accidents, to be admitted as an evidence of vitality; as the application of heat may act upon it as

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upon other inorganic matter to destroy its power of cohesion. Certain diseases appear to possess a similar power, and to produce detachments of large portions of the cuticle—after scarlatina desquamation is common; and there have been cases of erysipelas, in which the entire skin of the hands and feet have been thrown off.

Mr. Chevalier is not disposed to admit the apparent absence of sensibility as a proof of its inorganic nature, for he says, "we do not know of any instance in which parts, that are in no respect living, can be closely attached to those which are so, without an obvious, definite, and irreconcileable difference; a difference which always tends to a final and perpetual separation between one and the other, or to involve both in mutual destruction." The strongest facts in favour of the vitality of the epidermis are to be found in the facility with which it is reproduced; the uniformity with which all the parts are thicker or thinner according to its situations; and above all the diseases to which it appears to be liable. These morbid changes seem to imply a connexion with the vascular system. Epidermis has the property also of increasing in thickness from pressure; and workmen, whose occupation leads them to handle hard substances, are found to have their hands much more thickly covered with epidermis than others engaged in lighter employment.

Haller conceived the Epidermis to be formed by the drying up or condensation of the outer layer of the rete mucosum. Morgagni looked upon it as formed by the induration of the skin from the pressure of the atmosphere; an opinion at once negatived by the existence of it in the fœtus *in utero*, where the atmosphere can exert no influence. Richerand states it to be formed from a certain dry secretion of which the skin is the organ. The exhalents with which the dermal tissue is abundantly supplied, according to this physiologist, allow a viscous and albuminous fluid to escape, which contains a great proportion of phosphate of lime; and thus an envelope is found analogous to the shell which covers the egg. The epidermis under this view, may be considered as a kind of excrementitious tissue—as a residue or product of nutrition thrown on the surface of the body, and forming a useful and requisite protection to the economy of organized beings.

Mr. Hatchett has shown the epidermis, in all its properties, to resemble coagulated albumen.

One of the offices not the least in importance, performed by the epidermis, is the transmission of the perspiration. This is said to be exhaled through pores. The minuteness of these may readily be conceived from the tenuity of the matter of perspiration, which is principally discharged in the form of vapour, and has been called the *insensible perspiration*—when in the form of watery globules, the *sensible perspiration*. Mr. Abernethy long ago em-

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ployed the better terms of *aeriform* and *watery*. The sensible or watery perspiration was conceived by many to be the insensible or aeriform, condensed from its gaseous to its watery form; but it is the former in excess, for we find it consequent upon exertion, and taking place only when the secretion is not rapid. Mr. Chevalier paid some attention to this subject; and in his lectures at the Royal College of Surgeons, upon the Skin, he states that having carefully examined, by the aid of the microscope magnifying 140 times, various pieces of skin from different parts of the body, with the view of detecting the pores, he was not successful in his search; but that he observed an infinite number of *velamina* regularly arranged, of exquisite tenuity, presenting a follicular appearance, and separated from each other by bands of a thicker substance, crossing and intersecting them, so as to render them distinct. In these velamina Mr. Chevalier supposes the vessels of the cutaneous apparatus to be lodged; and so long as the vessels maintain a vital connexion with them, so long does he conceive they transmit their secretion through them, as through a bibulous, and exquisitely hygrometrical covering of the finest delicacy and perfection; while, through the same medium, and dependant on subjacent tubes taking a contrary course inward, absorption is carried on to a great, but less certain extent and continuity. The whole purpose which could be answered by pores, or holes, is, according to this statement, thus fulfilled by an arrangement, which while it answers all the purposes, avoids all the inconveniences of perforatory pores, as it obviates all chance of extravasation within, of hurtful exposure without, and of confusion in either direction. But when this vital union is destroyed, the cuticle, now reduced to its merely chemical but astonishing properties of endurance, becomes incapable of continuing its transmissive office with any certainty or regularity. It is macerated as it were, in the subjacent exudation, or impaired and broken through by the too active exertions of the vessels, which formerly nourished and supported it, so as to loosen and detach itself in pieces of various size, from fine powdery and furfuraceous scales, or portions, to large desquamations, and even to the entire covering it has given to a hand or a foot.

Mr. Cruikshank endeavoured to ascertain the nature of the insensible perspiration by experiment; and enclosed his hand in a wide-mouthed glass, securing the aperture by a bladder, which was fastened round the neck of the bottle to his wrist. In less than a minute he perceived the inner surface of the glass to be covered with a mist. This condensing and trickling down the sides, he found that, at the end of an hour, he had collected no less than a tea spoonful of a transparent insipid fluid which weighed 30 grains. According to the estimate obtained from this portion of the human body, and presuming

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that all the surface yielded a similar proportion, it would be found that the quantity of perspirable matter from the whole body, in one hour, would amount to 3 oz. 6 dr.; and in 24 hours to 7 lbs. 6 oz. He varied this experiment, but with a similar result. He also breathed into a bottle for one hour, and collected 124 grs. of a similar transparent fluid, or at the rate of 6 oz. 1 dr. and 36 grs. in 24 hours; which, added to the 7 lbs. 6 oz., produced from the external surface of the body, would make the perspirable matter to amount to not less than 8 lbs. 1 dr. and 36 grs. in the 24 hours. The fluid thus collected was subjected to chemical examination, and the result obtained was that fixed air (carbonic acid gas,) or rather a matter capable of being converted from atmospheric into fixed air, passes from the skin and lungs; and he thus establishes the affinity between the matter of insensible perspiration and the vapour of the lungs.

The nature of this fluid may reasonably be expected to differ, when the body is affected by particular diseases; but I am not aware that Chemists have been able to ascertain in what this difference may consist. Whether, indeed, the component parts beyond that of water, afforded by analysis of the matter of perspiration, are really essential to its nature, is not quite clearly ascertained. Berthollet, Fourcroy, and Thenard, have all examined it; and the latter has given rather an elaborate analysis of it. He states it to be essentially acid, and that this acid is *acetic*: there is also an appreciable quantity of muriate of soda, and perhaps of potash, with traces of the earthy phosphates, of oxide of iron, and a small quantity of animal matter. The account given by Berzelius differs from this. He supposes the perspiration to contain a free acid; and he states this to be the *lactic*, accompanied by the lactate of soda, muriates of soda and potash, and animal matter. This resembles the analysis given by this celebrated chemist of the serosity of the blood, with which indeed we should be prepared to expect an identity. Dr. Anselmino has given the following analysis: In 100 parts:—Calcareous Salts 2; animal matter with the Sulphate 21; Osmazone and Chlorurets of Soda and Lime 48; Osmazone, combined with the acetates and free acetic acid, 29.

The similarity of the functions of the skin and the lungs, has given rise to an opinion that the skin assists in decarbonizing the blood; and Mr. Bransby Cooper has suggested that this effect is produced in the skin, by the venous structure which he has pointed out, as characterizing the rete-mucosum, immediately beneath the cuticle.

Mr. Cruikshank, among other observations, makes the following curious remark:

" I have not the smallest doubt, but that *electric fluid* is also perspired from the pores of

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the skin—"*per poros cutis ignis erumpit: et feminæ dum se pectent ignem excitant, nescio an non primum advertente,* Mercurio ab Helmont," says Haller; and giving his own opinion adds, "*sed omnino perpetuum est, omnibusque communæ, lucem de nobis perspirare.*" It appears to me impossible that an enraged lion or cat should erect the hairs of the tail on any other principle. I have also strong suspicions, that as electric fire is now known to be the prime conductor of the variations in the atmosphere, that it is also the grand conductor of insensible perspiration."

This work was translated into German by C. F. Michaelis in 1798.

M. Chaumeton, in the Biographie Universelle, erroneously attributes to Mr. Cruikshank various works on the yellow fever; also, Critical Reflections on the Acid Fumigations of Dr. Carmichael Smyth. Watt's Biographia Britannica also incorrectly assigns to him some papers on chemical subjects inserted in Nicholson's Journal, and a communication in Dr. Rollo's treatise on Diabetes Mellitus. They are by other authors of the same name.

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WILLIAM HEBERDEN, M.D. F.R.S.

&c. &c. &c.

" ——————— Round him glows
An Atmosphere that brightens to the last
The light that shines, reflected from the Past,
——— And from the Future too!"

ROGERS.

THERE can be no exercise more congenial to a well-constituted mind than the contemplation of great moral and intellectual excellence. Every delightful feeling is called forth by this pleasing occupation—our benevolence is excited—our opinion of the human character is elevated—and, our piety and devotion towards the Supreme Author of all Good is heightened and established. There are few individuals whose lives are calculated to produce these feelings in a higher degree than the late Dr. Heberden; for of him it may justly be said, that " he was pious without hypocrisy, virtuous without austerity, and beneficent without ostentation."

Zimmerman has truly observed, that " the old age of a Physician who is respectable for his merit, is an honourable old age. Glory follows all his steps. The younger members of the profession give him all their respect and esteem. They call him their father, their monitor. He is their only guide in the obscurity which frequently surrounds them;" and Dr. Heberden fully illustrates the character thus drawn by the celebrated author of the " Essay on Solitude."

DR. WILLIAM HEBERDEN, the son of Richard Heberden, was born in London, in the year 1710. On the 17th of June, 1717, he was admitted into the Grammar School of St. Saviour, where he acquired the rudiments of his education. In the records of this School, I find the following entry: " At the Seventh meeting (of the Gentlemen who had been educated at

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St. Saviour's School, and on the examination of the Scholars), 17th of November, 1724, Preacher, Mr. Warnford, Minister of this Parish, there were acted, the two last scenes of Phormio in Terence, by *Mr. Heberdine*, (since of St. John's College, in Cambridge), Mr. Thomas Wimbush, Mr. Willymot Hoyland, and Mr. Joseph Spencer. In 1724, he entered at St. John's College, Cambridge; and took the degree of B.A. in 1728, and of M.A. in 1732. He obtained a fellowship in 1730, and then directed his attention to the study of medicine. Having taken the degree of M.D. in 1739, he practised his profession in the University for ten years. He read an annual course of Lectures on the Materia Medica; and the specimens collected by him for this purpose were, in 1750, presented by him to his college. I possess a MS. copy of these lectures, twenty-nine in number, and as they have not been published, a few extracts may interest the reader.

ANTIMONY.—"Diascorides mentions it had a vogue in physic, but it was not of long date, because it is very dangerous. In about the twelfth age, Basilius Valentinus, a certain monk, published a book, which was entitled, 'Currus Antimonii Triumphalis,' wherein he undertakes to affirm, that it was a remedy against all sorts of diseases. Three hundred years after Paracelsus brought it into vogue; but then in the year 1566, the use of it was condemned by Act of Parliament; and accordingly, one Besnier, a Physician, transgressing it, was excluded the faculty. In the year 1637, Antimony was again received by public authority, among the purging medicines; and in 1650, the Act made in 1566 was repealed. In 1657, the faculty caused it to be inserted in their Antidotarium, printed that year, herein following the opinion of Mathiolus; and, on the 29th of March, 1668, gave it the sanction of public authority, by which graduates were permitted to use it; but with a prohibition to all others, unless by their advice. Among the ancients Antimony was used to dye the Supercilia, or eye-brows, black; and accordingly, we read in Scripture, that the wicked Queen Jezebel, in order to charm the King, her husband, painted her eyes, (by which, I suppose, is only meant the eye-brows, with Antimony), and the women who used that practice, were also reproved by the Prophets: and from thence it was that this mineral got the name of *γοναικεῖον*, and some Greek author mentions it thus, *μέλαιναν σιμμιν ὀμματογραφον*; because it seems to dilate the eyes and make them appear fuller. It acquired the name of antimony in the opinion of some from the aforesaid Valentine, who, in his search after the Philosopher's stone, was wont to make much use of it for the more ready fluxing his metals; and throwing a parcel of it to some swine, he observed that they were violently purged by it after they had eaten it, but afterwards grew the fatter upon it, which made him harbour the opinion, that the same sort of cathartick exhibited to those of his own fraternity, might do them much service; but his experiment succeeded so ill, that every one who took of it died. This, therefore, was the reason it was called Antimony, as being destructive to the Monks."

VEGETABLES.—"There was a great dispute among the ancients, whether vegetables or fossils were best in physic. The vegetables were more used by the Galenists than Paracelsians. It is idle for us to regard those disputes, for there are extreme good medicines made

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from them both. Indeed, it was the general opinion formerly, that physicians ought to be chiefly skilled in the knowledge of vegetables; and Virgil hints at it when he says,

'Scire potestates herbarum usumque Medendi'

though there is little reason to think that vegetables are so universally good in physic, for there are not above 200 in our late Pharmacopœia, and numbers of them might be laid aside, if it was not for the two grand ingredients Mithridate and Theriaca. Our use of vegetables is greatly owing to our fondness for foreign vegetables, and those which our forefathers used; though the Botanists are at present very little regarded by Physicians."

"CINNAMON is the inner bark of a tree, which comes from the remotest part of the East Indies. That which the ancients had, is very probably the same; but it was so very rare with them, that they thought it a present fit for princes. We read, that Cleopatra burnt it with her greatest rarities, that Augustus might not get it; though the bark of cinnamon is so excellent a spice, yet the wood of the tree has neither taste, smell, or virtue, in the least degree. Cinnamon is not only an aromatic, but also an excellent astringent."

Throughout the course, numerous illustrations occur, and references are given to authors, ancient and modern. These are not confined to the writers on Medicine, but embrace numerous quotations from the Greek and Latin Poets, and show the extent of Dr. Heberden's reading in the higher walks of classical literature. Homer, Plautus, Plutarch, Vitruvius, Virgil, Horace, Lucretius, Cicero, Ovid, Persius, Lucan, Catullus, Juvenal, and Pliny, are all made to illustrate and adorn his discourses. Among his pupils were many, who, in after life, honourably distinguished themselves; of whom it is sufficient to mention, Sir George Baker, Bart., Physician to their Majesties, Dr. Gisborne, President of the College of Physicians in 1797, and Dr. Robert Glynn, well known by his eccentricities.*

* Dr. Glynn was educated at Eton, and went to King's College. He obtained the Seatonian Prize at Cambridge, in 1757, the subject being a Poem on "The Day of Judgment." He was well known for his wit and humour, for the good qualities of his heart, for his benevolence, and for his learning. He lived to the age of 82, and died in 1800. His physiognomy had a peculiar expression of archness and was unprepossessing, and there is a *jeu d'esprit* recorded, which seems to allude to this circumstance:

"This morning, quite dead, Tom was found in his bed,
Although he was hearty last night;
But 'tis thought, having seen Dr. Glynn in a dream,
That the poor fellow died of the fright."

Dr. G. was at the head of his profession at Cambridge, but he entertained sad prejudices as a practitioner. He was a determined enemy of the doctrines of Cullen; and he excluded from the list of his remedies three of the most powerful agents we possess for the cure of diseases, namely, bleeding, opium, and tartarized antimony. It is difficult to reconcile the blind and implicit deference paid by a man of vigorous intellect and great learning, (which Mr. Glynn's contemporaries admit that he possessed), to the doctrines of

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WILLIAM HEBERDEN, M.D. F.R.S.

In 1746, Dr. Heberden was elected a Fellow of the Royal College of Physicians, and two years afterwards he settled in London, where he rapidly attained to great professional reputation. His son, Dr. William Heberden, communicated to Dr. Macmichael, for his amusing work, "The Gold-Headed Cane," some information relative to his father, and it is therein stated, that Dr. Heberden would have settled in London at an earlier period, but for some unfair circumstances on the part of an individual, (who is not named, but with whom, in after life, Dr. H. is said to have generously lived on terms of friendship). Sir Edward Hulse, Bart., Physician in Ordinary to the King, recommended him to leave Cambridge and settle in London; and he sent to him a message to this effect by a person who never delivered it. Sir Edward afterwards made an explanation to Dr. H. on this subject, and received the following reply:—

"August 30th, 1748.

"I take the opportunity of returning my thanks by Mr. H., for your most obliging letter. No one can be ignorant that your assistance and recommendation must be of the highest advantage to any person who was beginning the practice of physic in London; and I am persuaded they would at any time have determined me to fix there, though I had otherwise no such intention. But I never was rightly informed that I had such a valuable opportunity in my power. By what accident or mistake it happened, I do not know, but the person you mention never acquainted me with it at all, nor indeed any one else, with authority from you. I had only heard accidentally, that you had expressed yourself with great civility, on a supposition of my removing to London. There was no reason, when I first heard such reports, to imagine that they amounted to anything more than your good wishes. As soon as I could believe there was the least probability of your intending to assist me with your interest, I immediately took the liberty of writing to you. I must reckon it among my greatest misfortunes, that this application came too late: though I shall always think myself under the same obligations to you, as if I had enjoyed the benefit of your kind intentions. My best acknowledgments are due for the assurances of your disposition to assist me still, where your other engagements have not put it out of your power; and it is with the highest satisfaction that I find myself possessed of a place in your friendship. I propose seeing London some time in October, in order to consult with some friends about the advisableness of my settling there, when I hope to have the pleasure of paying my respects to you."

In the Christmas following, he commenced practice in the metropolis, and resided in Cecil Street. In 1749, he was chosen a Fellow of the Royal

the old school in which he had been educated, and the intolerant disgust he manifested for all modern systems which he regarded as *innovations*.

Male verum examinat omnis
Corruptus judex.—HORAT.

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mos illi fuit in aegrotantium cubiculis annotare ea, quae vel ex ipsorum, vel ex assistentium ore audiverat, vel quorum ipse testis fuerat. Haec ibi raptim scripsit, ut potuit, et multa forsan notatu digna eum fugiebant. Quicquid autem in codicillum retulerat, singulis mensibus perlegit, ut excerperet ea, quae videbantur vel naturam morbi alicujus, vel vires remedii illustrare. Haec in alium librum transferre solitus fuit sub titulis morborum, ad quos pertinebant. In animo illi erat ex hoc libro conflare volumen Collectaneorum spectantium ad historiam morborum et remediorum. In quo adornando religio illi fuit aliquid literis mandare praeterquam quod in chartis annotatum inveniret; maluit enim hanc morborum doctrinam mancam et inchoatam relinquere, quam aliorum libros exscribere, vel etiam quam ex solu memoria quod deesset supplere, nisi rarissime, et ubi tuto memoriae fidere posset. Vix rudem hujus operis formam effinxerat, cum duos et septuaginta annos complevesat, et animus otium a laboribus studiorum expetere coepit. Has itaque chartas, ut erant, uni e filiis suis medicinae studium amplecteni legavit, utpote non prorsus illi inutiles futuras, quam quam indignas, quae in lucem prodirent.

Decessit die mensis anni

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Gulielmus Heberden natus est anno 1710 Londini, in qua urbe solitis pueritiæ literis institutus est. Exeunte anno 1724 missus est Cantabrigiam, et, in collegio Divi Joannis studiis academicis imbutus, post sex annos ejusdem collegii socius est electus. Ex illo medicinæ discendæ operam dedit partim in academia Cantabrigiensi, partim in nosocomio Londinensi. Factus itaque medicinæ Doctor artem hanc exercuit Cantabrigiæ circiter decem annos, atque simul materiæ medicæ historiam, et usus juventutem academicam quotannis docuit. Anno 1746 cooptatus est in regium collegium medicorum apud Londinenses. Biennio post, relicta Cantabrigia, Londinum se contulit; ubi Regiæ Societatis socius electus est; atque in ea urbe inter ægrotos occupatissimus vixit supra triginta annos: nimirum donec ætas jam grandior moneret, ut a tantis laboribus paulatim se subduceret. Coepit itaque otio indulgere per æstivos menses in domo, quam habuit Windesoriæ ad vigesimum ab urbe lapidem. Hieme interea in urbem redux ægrotantium domos obire non destitit.

Anno 1766 autor fuit collegio medicorum Londinensium, ut Commentarios subinde vulgarent iis tantum rerum, quas fors erat ratio collegis objiceret, quibus artis sua pomœria promoverentur. Hoc consilium unanimi sociorum consensu comprobatum est; atque adeo duo volumina, et pars tertii in vulgus edita fuerunt. Anno 1778 Regia Societas Medicina, a Rege Christianissimo Parisius instituta, illum in socios suos numerare non dedignata est.

Nonnulla ejus observationes extant in actis Philosophicis Regiæ Societatis Londinensis, et in actis mediis collegii medicorum Londinensium.

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Society; and to the Philosophical Transactions, he was a contributor of four papers:—

1. (Vol. XLVI. p. 596.) *An Account of a very large human Calculus.* This is preserved in the Library of Trinity College, Cambridge, and was exhibited to Charles II., when at Newmarket, and a piece chipped off to instruct his Majesty upon the formation of Calculi. It weighed 33 ounces, 3 drachms, and 36 grains. About half an ounce was supposed to have been broken off for the purpose above stated.

2. (Vol. LIV. p. 198.) *An Account of the Effects of Lightning at South Weald, in Essex.* The object of this paper appears to have been to enforce the utility of Dr. Franklin's metallic rods from the roofs of buildings to the ground, to secure them from the effects of electric matter.

3. (Vol. LV. p. 128.) *An Account of a Stone voided without help from the Bladder of a Woman, at Bury.* This Calculus, of which a representation is given, measured in length 3¼ inches, and in circumference, 4¼ inches. No particulars are given to enable the reader to form an opinion on the extraordinary exclusion of so large a substance.

4. (Vol. LIX. p. 359.) *Of the different Quantities of Rain, which appear to fall, at different heights, over the same spot of ground.* This subject is illustrated by a Table, which gives the result of observations made during one entire year, from July 7th, 1766, to July 7th, 1767.

In 1760, Dr. Heberden married Mary, the eldest daughter of William Wollaston, Esq., by whom he had eight children, two only of whom survived him, the present Dr. William Heberden, and Mary, who married the Rev. G. Jenyns, Prebendary of Ely.

Dr. Heberden was highly esteemed by His Majesty, George III., and upon the Queen Charlotte's arrival in England, in 1761, he was named Physician to Her Majesty; an honour, however, he thought proper to decline, as he was apprehensive it might interfere with those connexions in life that he had now formed.

In 1778, he was elected an Honorary Member of the Royal Society of Medicine, at Paris.*

* It was customary to give notices of the deceased Honorary Members in the Transactions of this Society, and Dr. H. had drawn up the account of himself, leaving blanks for the day, month, and year, of his decease. By the kindness of his son, I am enabled to give the accompanying *fac-simile* of this interesting document, which also affords a specimen of the author's latinity.

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Dr. Heberden died in Pall Mall, on the 17th of May, 1801, at which time he had reached his 91st year, and was the senior fellow of the College of Physicians. The serenity of his mind at this trying hour is shown by the recorded fact, that within forty-eight hours of his decease, he repeated a sentence from an ancient Roman author, signifying that "Death is kinder to none than those to whom it comes uninvoked." He admirably illustrated the truth of an observation made by the late Dr. Knox, that "Religion is able of itself most effectually to dissipate the clouds, and to diffuse a sunshine on the evening of life." In 1796, he met with an accident that disabled him for the remainder of his life. Previous to this he had been in the habit of taking daily exercise. His cheerfulness was in no degree disturbed by this occurrence, for when he was fast approaching to the age of 90, he observed, that though his occupations and pleasures were certainly changed from what they had used to be, yet he knew not if he had ever passed a year more comfortably than the last. He had, for many years, declined the practice of his profession; and in the Notes and Illustrations appended to Dr. Percival's Medical Ethics, there are two letters from Dr. Heberden, to the author. They were written in 1794, and thus allude to his retirement:

"I have entered my 85th year; and when I retired, a few years ago, from the practice of physic, I trust it was not from a wish to be idle, which no man capable of being usefully employed, has a right to be; but because I was willing to give over, before my presence of thought, judgment, and recollection was so impaired, that I could not do justice to my patients. It is more desirable for a man to do this a little too soon, than a little too late; for the chief danger is on the side of not doing it soon enough."

"I please myself with thinking, that the method of teaching the art of healing is becoming every day more conformable to what reason and nature require; that the errors introduced by superstition and false philosophy are gradually retreating; and that medical knowledge, as well as all other dependent upon observation and experience, is continually increasing in the world. The present race of physicians are possessed of several most important rules of practice, utterly unknown to the ablest in former ages, not excepting Hippocrates himself, or even Æsculapius."

His resolution to retire seems to have been formed in consequence of the impairment of the faculties of Dr. Mead, which Dr. Heberden witnessed in a consultation on the Duke of Leeds. It is reported that Dr. H. then determined within himself, that if he ever lived to the same age (78) he would give up practice. Dr. H. retired in 1782, at which time he was only 72, and his faculties were then perfect. At first, he withdrew to a house at Windsor,

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where he spent the summer months, and was in London only during the winter, visiting the sick—

> "Attending always, but attending more
> Where sorrow ask'd his presence, than before,
> Tender and ardent, with the kindest air."
>
> CRABBE.

He afterwards retired altogether from professional business.

The classical attainments of Dr. Heberden were of a high order, and he was liberal in his patronage to works of erudition and merit. He enjoyed an intimacy with the chief literary and scientific men of his day; among whom I may mention, Gray, Jacob Bryant, Mason, Cavendish, Bishop Hurd, Bishop Lowth, Dr. Kennicott, Dr. Jortin, Tyrwhitt, Stuart, &c. He published from among Dr. Conyers Middleton's MSS. *Dissertationis de Servili Medicorum conditione Appendix.* These MSS. came into his possession, being bequeathed to him by the widow of Dr. M.; and Dr. Cole tells an anecdote of him, in relation to these, which is curious, and was mentioned to him by Dr. Newton, Bishop of Bristol. He says,

"Understanding that Dr. C. Middleton had composed a book on the 'Inefficacy of Prayer,' Dr. H. called upon his widow soon after the Dr.'s death, and asked her if she was not in possession of such a tract? She answered that she was; he then asked her, if any bookseller had been in treaty with her for it? She said that a bookseller had offered her £50. for it. He then demanded, if there was a duplicate? 'No;' upon that he requested to see it, and she immediately brought it, and put it into his hands. The Dr. holding it in one hand, and giving it a slight perusal, threw it into the fire, and with the other hand gave her a £50. note."

Dr. Macmichael tells this anecdote differently:

"After the death of Dr. C. M., (he says) his widow called upon Dr. Heberden, with a MS. treatise of her late husband, about a publication of which she was desirous of consulting him. The religion of Dr. M. had always been justly suspected, and it was quite certain that his philosophy had never taught him candour. Dr. H. having perused the MS., which was on the 'Inefficacy of Prayer,' told the lady, that though the work might be deemed worthy of the learning of her departed husband, its tendency was by no means creditable to his principles, and would be injurious to his memory; but as the matter pressed, he would ascertain what a publisher might be disposed to give for the copyright. This he accordingly did; and having found that £150. might be procured, he himself paid the widow £200., and consigned the MS. to the flames."

This anecdote, in whichever way it is to be received, accords with that regard for religion which is uniformly reported to have characterized

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Dr. Heberden. The very slight sketch of his character prefixed to his Commentaries, states, that

"From his early youth he had always entertained a deep sense of religion, and a consummate love of virtue, an ardent thirst after knowledge, and an earnest desire to promote the welfare and happiness of mankind. By these qualities, accompanied with great sweetness of manners, he acquired the love and esteem of all good men, in a degree which, perhaps, very few have experienced; and, after passing an active life, with the uniform testimony of a good conscience, he became an eminent example of its influence, in the cheerfulness and serenity of his latest age."

He paid the entire cost of the printing of that most valuable classical work, the *Supplices Mulieres*, of Euripides, with Notes, by Mr. Markland, though it originally appeared without the name of the editor and commentator. Of this work, 250 copies only were printed, according to a note found in one of Markland's books; and this note speaks in desponding terms of the little encouragement given in his day to classical learning. This was not the only work of Euripides, edited by Markland, for, in 1771, was printed by the celebrated W. Bowyer, *Iphigenia in Aulide et in Tauris*. A letter to the printer, dated January 28th, 1768, shews that Markland had intended this to have been a posthumous work, as he says,

"I am going on apace with the two plays; have finished one, and one-third of the other; heartily wishing that it might be agreeable to Dr. Heberden to make it a posthumous work, if he approves of the notes; or to destroy them (it will give me no pain) if he does not; either of which will make it very easy to him, and desirable to me. In the meantime he shall have them in less than a month. Please to let him know that I wish this most sincerely, and on that supposition have written a dedication to him, as if I was a dead man."

Dr. Heberden had great regard for Mr. Markland, and held his learning in high estimation. He wrote his epitaph, which was engraved on a brass plate, and placed in Dorking church. Mr. M. had bequeathed to him all his books and papers. One of the books was the celebrated edition of the Greek New Testament, by Dr. Mill, the margin of which was filled with MS. notes; and this work was lent by Dr. H. to the publisher of the edition of Bowyer's Conjectures on the New Testament, put forth in 1782. Mr. Markland was only one of many scholars who paid tributes of regard to Dr. H.; in this manner Mr. Bowyer left to him a cabinet of coins, a few books specifically, and any others he might choose to accept.

Dr. Heberden's charity to the poor was more extended even than his protection of literary men. There was scarcely a public institution to which he

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did not liberally subscribe, and his private donations were numerous and large. As soon as his professional emoluments were adequate to his wants, he resigned the fellowship of St. John's, that some poorer scholar might be benefitted by the appointment. His character as a professional man, and the high estimation in which he was held by all classes, cannot be better exemplified than in a letter by the late Dr. Wells, printed, but not published, and addressed to Lord Kenyon, relative to some conduct of the College of Physicians, posterior to the decision of the Court of King's Bench, in the case of Dr. Stanger; in which the following nervous sketch of Dr. Heberden appears: respecting which, it is necessary to premise, that Dr. H. had formed the subject of a well-deserved eulogy of the Lord Chief Justice, in which he drew an inference, to which Dr. W. was not disposed to agree, of attributing to a whole species the properties observable in one individual.

"But Dr. Heberden, my lord, stands, in a manner, alone in his profession. No other person, I believe, either in this or any other country, has ever exercised the art of medicine with the same dignity, or has contributed so much to raise it in the estimation of mankind. A contemplation of his excellencies, therefore, can afford little help towards obtaining a just notion of the general worth of physicians. In speaking of a mole-hill, we could not employ terms that had relation to the immensity of a mountain.

"Were I, my lord, possessed of talents adequate to the undertaking, I should here endeavour to describe, at full length, the character of that illustrious man. In this attempt, I should first mark his various and extensive learning, his modesty in the use of it, and philosophical distrust of human opinions in science, however sanctioned by time, or the authority of great names. I should then exhibit him in the exercise of his profession, without envy or jealousy; too proud to court employment, yet underating his services after they were performed; unwearied, even when a veteran in his art, in ascertaining the minutest circumstances of the sick, who placed themselves under his care, taking nothing in their situation for granted, that might be learned by inquiry, and trusting nothing of importance that concerned them to his memory. To demonstrate his greatness of mind, I should next mention his repeatedly declining to accept those offices of honour and profit at the British Court, which are regarded by other physicians as objects of their highest ambition, and are therefore sought by them with the utmost assiduity. I should afterwards take notice of his simple, yet dignified manners, his piety to God, his love for his country, and his exemplary discharge of the duties of all the private relations in which he stood to society; and I should conclude, by observing, that his whole life had been regulated by the most exquisite prudence, by means of which his other virtues were rendered more conspicuous and useful; and whatever failings, he might as a human being possess, were either shaded or altogether concealed. After my description was finished, I should think it proper to say, that I had never been acquainted with Dr. Heberden, and consequently could neither be dazzled by the splendour of his virtues, from approaching them too nearly, nor influenced in my opinion concerning them, by benefits he had already conferred upon me; and that standing, as he does, upon the verge of this state of existence, ready to wing his

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flight to another of glory, his ear must now be closed to the voice of flattery, had he ever listened to that siren, or were I base enough to solicit her aid, in the foolish expectation of receiving from him some future reward."

Dr. Heberden's earliest published work was a little pamphlet, entitled, ΑΝΤΙΘΗΡΙΑΚΑ, in the form of *An Essay on Mithridatium and Theriaca.* It appeared in 1745, and is characteristic of the precision and accuracy by which the writings of Heberden have been distinguished. The famous antidote to the baneful effects of poisons said to be possessed by Mithridates, King of Pontus, is here shewn to have been composed of the most simple ingredients: namely, twenty leaves of rue, one grain of salt, two nuts, and two dried figs. This is given upon the authority of Q. Serenus Samonicus, and is a very different composition to that named after the monarch, in the time of Celsus, which consisted of thirty-eight simples, and these it appears, were changed every century; so that the Mithridatium of one period bore little or no resemblance to that of another. Dr. Heberden states, that the ancients were only acquainted with *three* kinds of poison—hemlock, aconite, and that of venomous beasts, and to these they knew no antidotes. The various effects of different substances may, probably, in the earlier ages, have excited the apprehensions of mankind, and their ignorance of their nature may have given rise to the relation of miraculous stories regarding poisonous substances. Dr. H. very properly ridicules these accounts; such as the concealing of poisons under the stone of a seal or ring, as reported by Theophrastus, or by vapours arising from perfumed gloves or letters. Many modes of poisoning are mentioned, as having been practised by the Italians, among others, that of poisoning the clothes. Ben Jonson, in his "Every Man in his Humour," puts the following passage into the mouth of the jealous Kiteley:—

> "Now, God forbid, O me, now I remember,
> My wife drank to me last, and changed the cup;
> And bade me wear this *cursed suit* to-day."

These practices were not confined to Italy. Our own country shared the like, and we learn that Queen Elizabeth was in constant dread of being taken off in this way. Two men were hanged in 1598, for poisoning her saddle! These follies and superstitions are now, thank Heaven, entirely exploded. But the history of the poisoners of the sixteenth century, must be read with deep interest. The Poet Rogers, alludes to them in the following lines:—

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" ——————— Misnamed to lull alarm,
In every Palace was the Laboratory,
Where he within brewed poisons swift and slow,
That scattered terror 'till all things seemed poisonous:
And brave men trembled if a hand held out
A nosegay or a letter; while the Great
Drank only from the Venice-glass, that broke,
That shivered, scattering round it as in scorn,
If aught malignant, aught of thine was there,
Cruel TOPHANA."

The Transactions of the Royal College of Physicians, known by the title of " Medical Transactions," were undertaken at the recommendation of Dr. Heberden. He first proposed that the members of the college should collect together their observations, and publish them for the benefit of society. He contributed largely to this design, and his papers constitute some of the most valuable contributions to the work. A very brief preface is attached to this collection of papers. From a sketch, printed in the Appendix to the Commentaries on Diseases, it appears that Dr. Heberden, had intended drawing up a very full prefatory address to the Transactions. In this he endeavours to point out the means of improving in natural knowledge, and he shews, that by attentively observing nature herself, and not building upon the ancients or upon reasonings *a priori*, a greater progress has been made during the last century than had been till that time from the days of Aristotle. He alludes to the advantages derived from the formation of a common stock by the communications received from all quarters by the learned Societies of Europe—contributions that would never have been made in any other way. The following passage will be read with interest:

" The deference which is sometimes required in physic to the authority of the ancients, would incline any one to suspect, that the improvements in the art of healing had not kept pace with those which have been made in other branches of natural knowledge. Philosophers have long ago thrown off Aristotle's tyranny; yet some physicians still choose to wrangle about the meaning of the ancients, rather than to consult nature herself. Are they afraid of approaching her immediate presence, without making use of the intercession of Hippocrates and Galen? And is that reverence to be still paid to her once faithful ministers, which is properly due to nature alone, notwithstanding all that Bacon, and Harvey, and Newton, and our other great reformers, have witnessed against this mistaken veneration? In works of genius the ancients are unquestionably our superiors and best patterns; but in that sort of knowledge which depends wholly upon experience, the latest writers must in general be the best.—Experience may, in politics and morality, be called the teacher of fools; but in the study of nature, there is no other guide to true knowledge: accordingly, the practice of physic has been more improved by the casual experiments

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of illiterate nations, and the rash ones of vagabond quacks, than by the reasonings of all the once celebrated professors of it, and theoretic teachers in the several schools of Europe: very few of whom have furnished us with one new medicine, or have taught us better to use our old ones, or have in any one instance at all improved the art of curing diseases."

This opinion accords well with that given by Sir William Temple, who says,

"I had ever quarrelled with their studying art more than nature, and applying themselves to methods rather than to remedies; whereas the knowledge of the last is all that nine parts in ten of the world have trusted to in all ages."

In the first *three* volumes published in 1768, 1772, and 1785, there are *sixteen* papers by Dr. Heberden.

1. (Vol. I. p. 1.) ***Remarks on the Pump Water of London, and on the Methods of procuring the purest Water.***
2. (Vol. I. p. 45.) ***Observations upon the Ascarides.*** Dr. Heberden conjectures the mucus of the intestines to be the proper nidus of the ascarides, in which they live, and which perhaps constitutes the food by which they are nourished. It is unnecessary to allude to the remedies suggested, as they have all been found inefficient in the cure of the disease which is now known very generally to yield to the preparations of turpentine.
3. (Vol. I. p. 60.) ***Of the Night-Blindness, or Nyctalopia.*** This case succeeded the suppression of a tertian ague by the use of the bark and the cold bath. It occurred to the patient when at sea, and quitted him on land. He had formerly been employed in lead works, and had suffered from paralysis, an ordinary effect among workers of that metal.
4. (Vol. I. p. 427.) ***On the Chicken-Pox.*** The Exanthemata were not so well understood in Dr. Heberden's time as in the present, when, from the scientific distinctions introduced by Dr. Willan, and his successors, in this division of medicine, the subject is accurately discriminated. The sagacity of Dr. Heberden enabled him to give to us the first *scientific* account of the Varicella or Chicken-Pox, and to mark the differences between this eruption and that of the Small-Pox. These he states to be,

"1. The appearance from the second or third day from the eruption of that vesicle full of serum upon the top of the pock. 2. The crust, which covers the pocks on the fifth day; at which time those of the small-pox are not at the height of their suppuration."

Dr. Heberden's description of the disease has been very generally adopted by succeeding writers; but Willan has the merit of distinguishing the varieties of the disease. According to Dr. Bateman, he proposed to distinguish

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Chicken-Pox, Swine-Pox, and Hives, as they were called in the North of England, and in some counties of Scotland, varieties according to the different form of their vesicles into the lenticular, the conoidal, and the globate.

5. (Vol. I. p. 437.) *The Epidemical Cold, in June and July*, 1767. This was manifestly epidemical: it commenced about the middle of June in London, was at its height the beginning of July, and had entirely ceased before the end of the month.

6. (Vol. I. p. 470.) *Queries.* These relate to various diseases, and the remedies proposed: it is not necessary to particularize them.

7. (Vol. II. p. 1.) *Of the Hectic Fever.* Up to the time of John Hunter the hectic fever was considered to be the result of the absorption of matter, and psoas abscess and consumption of the lungs seemed to favour this supposition. Dr. Heberden is the first writer to look upon the disease, as the effect of repeated formations of matter, and not of its absorption. He called it the symptomatic fever, the irregular intermittent, and the fever attendant upon repeated suppurations. But, as the symptomatic fever does not necessarily become the hectic, there is some difficulty in reconciling all the opinions of Dr. H. upon this subject, as detailed in this masterly paper. Mr. Hunter looked upon those fevers as the effect of sympathy, and he very properly distinguishes them from each other, by their causes as well as by the phenomena they respectively present.

8. (Vol. II. p. 18.) *Remarks on the Pulse.* In this paper Dr. H. observes, that "all who begin the study of physic, must find in the doctrine of the pulse, as collected from medical writers by Bellini and others, a great deal which they do not understand; and all, who have advanced a little in the practice of physic, can have very little doubt of its not being understood by the authors themselves." The minute distinctions of the several pulses he conceives exist only in the imagination of the makers, and ought not to be regarded in the knowledge and cure of diseases. As an index both of health and disease, the examination of the pulse has been regarded as most important, from the earliest ages of medicine. In health it has been shown to be subject to be affected by the following causes: —

1. Such as arise from bodily organization, as that of sex, temperament, and stature.

2. Such as arise from difference of time of life—time of day—state of the system respecting rest or activity—mental agitation—effects of food and abstinence.

The mean number of pulsations in a healthy man may be rated at seventy-five in a minute.

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Sex. The pulses of women are considerably quicker than those of men. Dr. Falconer found the average number of the pulse of seven women in health, between thirty and forty years of age, and each of them of moderate stature, to be eighty-four in a minute. It is remarkable, that the slowest pulses ever known by Dr. Falconer, who has bestowed great attention to this subject, were of women; one of them being twenty-four and the other thirty-six in a minute. The pulse of a man, a patient in Guy's Hospital, and recorded by Dr. Cholmley, varied from thirteen or fourteen to twenty-eight pulsations in a minute. But Lizari mentions a person whose pulse beat only ten in a minute. Dr. Heberden suspects that, in the cases of extremely low pulse, the artery beats oftener than it can be felt; because such slow pulses are unequal in their strength, and some beats are only just strong enough to be perceived—others may not be sensible to the touch.

Temperament. The difference of temperament is another cause of the difference of pulses. Those who bear marks of a sanguineous habit, have generally quicker pulse than persons of dark-coloured hair and eyes, pale or sallow complexion, &c.

Stature. The length of stature of the body has probably considerable influence on the pulse: the taller the individual the slower the pulse.

Age. The pulse of new-born children may be computed according to Dr. Heberden, at 130 to 140; during the first year, 108 to 120; during the second, 90 to 100; during the third, 80 to 108; the same from the fourth to the tenth year; during the twelfth, 80 to 90; and in the adult, 60 to 80.

This table manifests, in a general way, the decrease of the number of the pulse, from infancy to full age. Dr. Falconer is of opinion, that the pulse in a healthy person becomes gradually slower, from about forty-five years of age to about sixty; after which period it begins again to grow quicker, and to become, as several other circumstances in the system do also, more resembling that of children.

Time of Day. The pulse varies at different times of the day. The variation may, perhaps, as Dr. Falconer has suggested, have been originally produced by the recurrence of food, exercise, employment of the mind, and other causes that occur at regular intervals in the course of the day, and which act as stimulants upon the system; and the force of habit, strengthened by long duration and frequent repetition, may continue to produce the same effect, even in the absence of the originally existing cause. Sir John Floyer remarked the periodical variation of the pulse; but his observations were not reduced into any regular comparative form or table. According to his account, his own pulse, in the morning fasting, beat 76 times in a minute; a little before dinner 77; and after dinner 95 times. Senac has left a few

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observations on the same subject. His pulse, which was 62-5 in the morning, rose to 86 after dinner. Haller found that the pulse, which in the morning beat 75-3, in the evening, towards the time of rest, beat 82. The most distinct and correct account of any, respecting this matter, is given by Dr. Bryan Robinson; and his table appears to have been formed with great accuracy, and to have been the result of sufficient experience.

Sleep. From the absence, or at least suspension, of the numerous exciting causes affecting both the mind and body, which take place in a waking state, we might reasonably suppose that the pulse would be slower during sleep, and this appears to be the fact; but it is difficult of precise determination, as an increase may be produced by too great pressure and heat from bed-clothes; taking of warm suppers, spirituous liquors, &c., all of which tend to increase the action of the circulating system.

Activity. Exercise is well known to quicken the pulse. The proportion, given by Dr. Robinson, of the effects of bodily motion, is as follows: lying down, 64; sitting, 68; standing, 78; walking at the rate of two miles an hour, 78; at the rate of four, 100. Running raised it to 140, 150, or more. Speaking during the examination of the pulse, a few words only, I have found to quicken it some beats in the minute.

Mental Agitation. This in general quickens the pulse; but fear, anxiety, grief, remorse, and the debilitating passions weaken it.

Temperature. Increase of temperature produces an increased frequency of the pulse. Floyer constructed a table to show the number of pulses at different degrees of temperature, which is ingenious, but liable to objections.

Food and Abstinence. The former increases the pulse, the latter diminishes it. The increase arising from a meal may be computed at seven beats in a minute.

To extend this subject to the changes produced by disease would occupy much time and attention. There would be no end to the detail of the conceits respecting the pulse. Avicenna treated of the pulse musically; and Hoffenuffer, pursuing his principles, drew up, in 1641, a musical scale of the pulse, dividing it by musical time, and marking the different beats by semi-breves, minims, and crotchets, semiquavers and demi-semiquavers; thus reducing his patient to a harpsichord, and his profession to a chapter on thorough-bass. Buchoz has also, as late as 1807, published at Paris, the *Art of Knowing and Designating the Pulse by Musical Notes.* Herophilus, the ancient and celebrated anatomist, also assimilated the variations, differences, strength, and quickness of the arterial pulsations to musical cadences. But in 1827 was published in this country, by an ingenious Neapolitan physician, Dr. Rucco, a very curious and elaborate work in two large octavo

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volumes, expressly devoted to the pulse; and this author contends for the superior knowledge possessed by Hippocrates and Galen respecting it; and endeavours to show that the decline of Sphygmica, as it is called, occurred under the Arabian physicians, and condemns the inattention with which the matter is now treated.

The qualifications duly to explore the condition of the circulating system, and the rules to be observed are, I fear, of too refined and complicated a nature to meet with many followers. Dr. Rucco conceives the pulse to vary not only according to age, sex, and temperament, but also according to climate; so that the pulse of the inhabitants of cold, hot, or temperate climates, are dissimilar to each other. This variety of pulse does not exist only agreeably to the physical character of the organization of the inhabitants of different climates; but under disease is said to shew forth in more distinct differences. To appreciate the variations, modifications, and differences which under like circumstances are produced upon the pulse by the sole action of different climates as influencing in various ways the physical constitution of man, he visited Paris, the United States, and this country; and the work I have mentioned gives the result of his enquiry. He divides the pulse in disease into the *diagnostic*, *organic*, and *critical*. Among the *diagnostic* pulses there is the great, the small, the hard, the soft, the strong, the weak, the quick, the slow, the rare morbose pulse, and the equal and unequal. Of the *organic*, there are the capital, the nasal, the guttural, the pectoral, the splenic, the intestinal, the uterine, the urinary, the cutaneous; and of the *critical*, there are as many heads as there are of organic; so that the whole is a very minute affair, too minute for further notice in this place, and too speculative, I fear, to be useful. Of the *organic uterine* pulse, Dr. Rucco goes so far as to say, that he can detect the presence of a male or a female child in the uterus, which it must be admitted, is reducing Sphygmica to a very great degree of refinement indeed. The work is exceedingly curious, and contains some very good observations.

9. (Vol. II. p. 59.) *Some Account of a Disorder of the Breast.* This disorder is the Angina Pectoris, and is the first distinct account given of it. Dr. Heberden gave the name of Angina Pectoris to it from the sense of strangling and anxiety with which it is attended, and he describes the symptoms with great accuracy and perspicuity. But he was ignorant of its true pathology, which anatomists have shewn to consist in an ossified condition of the coronary arteries, by which the heart itself is supplied with blood for its growth and nourishment.

10. (Vol. II. p. 123.) *Of the Diseases of the Liver.* This does not aim at

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being a complete history of the diseases of this organ, but merely contributes some materials towards that object. He refutes the opinion prevalent among poets rather than philosophers, that every object appears yellow, to the eyes of a person in the jaundice:

> "Lurida præterea fiunt quæcunque tuentur
> Arquati ——." LUCRET.

11. (Vol. II. p. 173.) *Of the Nettle-rash.* He describes the appearances of Urticaria, and details a variety of causes productive of the disease. Dr. Willan has given an account of six varieties of it, none of which are contagious. Its connexion with the functions of the stomach are now well known; and attention to diet is, therefore, of the first importance, as a means of relief.

12. (Vol. II. p. 216.) *An Account of the noxious effects of some Fungi.* Although naturalists have done much towards distinguishing those fungi which are noxious to the human frame from those which may be eaten with impunity, or with benefit, much yet remains to be done. These fungi had been mistaken for champignons—the poisonous effects were severe, but yielded to the exhibition of emetics.

13. (Vol. II. p. 499.) *Queries.* These are appended to the second volume in the same way as in the preceding one, and relate to the indications offered by the appearance of the blood in diseases—on the symptoms attending incarcerated hernia—the danger of being in wet rooms, damp clothes or beds, and some consequences of venesection.

14. (Vol. III. p. 1.) *Case of Angina Pectoris.* This detail gives a dissection made by John Hunter, who only observed some specks of commencing ossification of the aorta, and some adhesions of the lungs to the pleura.

15. (Vol. III. p. 34.) *The Method of preparing the Ginseng Root in China.*

16. (Vol. III. p. 389.) *Of the Measles:*—

"Bleeding (he says) may be used at any time, and is always beneficial, where the symptoms are very distressing, particularly an oppression of the breath, to which every stage of this distemper is liable; nd bleeding, together with such medicines as the occasional symptoms would require in any other fever, is the whole of the medical care requisite in the measles."

To the Medical Observations and Inquiries, (Vol. VI. p. 349,) Dr. Heberden contributed a Paper, on the Epidemic Influenza, of 1775.

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The remaining work of Dr. Heberden to be noticed, was a posthumous one: *Commentarii de Morborum Historia et Curatione.* This appeared a year after his decease, and edited by his son, the present Dr. William Heberden—but it was composed, or rather arranged, in 1782—is written in Latin and in English: the former has a very brief account of the author's life, and a dedication to George III.; the latter has only a preface. Of the former, Professor Soemmering published an edition at Frankfort, in 1804, and Dr. Niemann another at Leipsic, in 1805; and it has since been admitted among the Latin Medical Classics, published at Leipsic, by Friedlander. The English work has gone through several editions. The value of Dr. H.'s observations has been very generally admitted—they must be acknowledged, as they have been drawn from his own experience, unbiassed by any particular system or peculiar theory. He read the Book of Nature, and was one of her most faithful expositors. If any objection is to be offered to the work, it consists in a want of systematic arrangement, by which the matter would have been more generally useful. The accuracy and consequent value of the observations themselves are unquestionable. In Dr. Baillie's life, I have endeavoured to account for the apparent inertness of his practice; the same observations will apply to Dr. Heberden. He seems to have had little confidence in remedies—more in Nature herself; and his practice was, therefore, mostly palliative. No analysis of this work can here be given: there is an index to refer to the subjects, which are arranged alphabetically, being preceded by some general remarks on *Diet*, and the *Ratio Medendi.* The volume concludes with the following reflection, which, if admitted to be correct, must render the prospect of improvement in medicine as next to hopeless:

"The art of healing has scarcely hitherto had any guide but the slow one of experience, and has yet made no illustrious advances by the help of reason; nor will it probably make any, till Providence think fit to bless mankind by sending into the world some superior genius capable of contemplating the animated world with the sagacity shown by Newton in the inanimate, and of discovering that great principle of life, upon which its existence depends, and by which all its functions are governed and directed."

With this brief sketch of the labours of Dr. Heberden, I conclude this memoir, by expressing the admiration I feel excited by a contemplation of his moral character, and the respect I must necessarily entertain for his high intellectual endowments. He was, indeed, a man distinguished by "sanctity of manner, genuine science, unabating assiduity, and magnanimous disdain of money."

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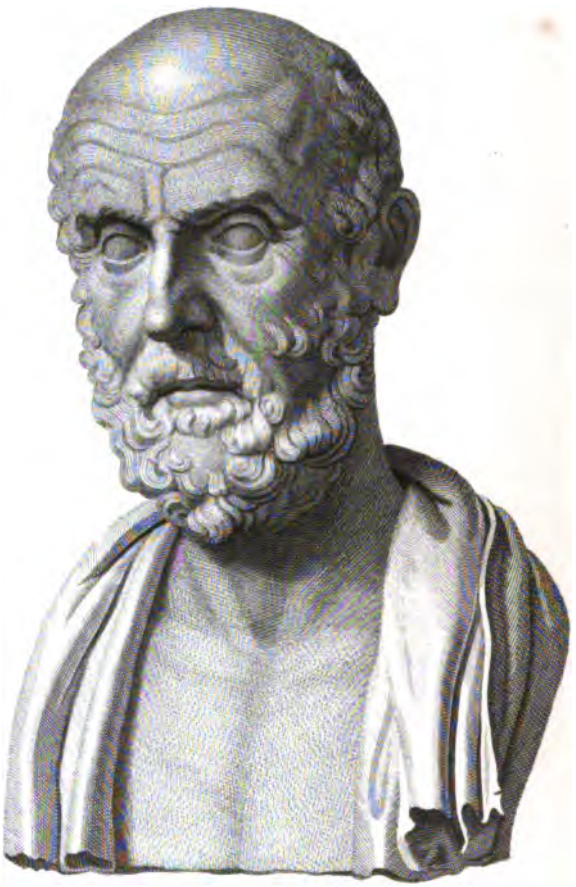

W. Skelton, sculpt.

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HIPPOCRATES.

"Ιατρὸς γαρ θιλόσοθος ἰσόθεος."

HIPPOCRATES,—"The Prince of Medicine,"—"The Father of Physic,"—"The Oracle of Cos,"—"The Divine Old Man,"—was born at Cos, one of the islands of the Archipelago, at the commencement of the 80th Olympiad, 460 years A.C. He was the son of Heraclides, the physician, and is reported to be the 17th lineal descendant from Æsculapius. His mother was Phenerata, or Praxita, the 18th in descent from Hercules. In the family of Hippocrates there are no less than seven physicians named. Of four of these their writings have been specified. Hippocrates I. was the contemporary of Themistocles and Miltiades, and is the supposed author of the work on the articulations, fractures, &c., and a part of the *Prænotiones Coacæ*. Hippocrates II. the Great, is the subject of this notice. Hippocrates III. grand-son of the preceding, wrote books on Diseases, and the second part of the work, *De Natura Hominis*, has been assigned to him. Hippocrates IV. was physician at the court of Macedonia, and cured Roxana, widow of Alexander the Great. To him has been attributed the 5th book of the Epidemics. Draco and Thessalus, sons of Hippocrates II., were also physicians, and Polybus his son-in-law.

Hippocrates received his earliest instructions in medicine from his father, and from Herodicus; and, in general science and philosophy, he was taught by Gorgias, the celebrated sophist and orator. He lived in the best and most advanced periods of Greece. He was the contemporary of Socrates, Plato, Herodotus, and Thucydides; and he was educated by the most distinguished masters of that time, studying Logic, Physics, Natural Philosophy, Geometry, and Astronomy, in addition to Medical Science. To the instruction of Gorgias is probably to be ascribed his remarkable talent in composition. His writings have been regarded as models of elegance. His

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style has been described* as perfect in its kind, and particularly well adapted to the sciences, by the clearness of its terms, and the force of its expression; and as being not less remarkable for the liveliness of its images, and for that rapidity which seems only to glance over the different objects, but which, in reality, investigates them all thoroughly, by arresting and comparing their true distinguishing features. The authority I have quoted has also justly said, that the perusal of the works of Hippocrates is, to this day, one of the most instructive exercises to which we can apply; not that the facts which are found contained in them have not been revised by the moderns, in collections that are infinitely more ample and perfect; but because no other writer, without exception, initiates us so far into the knowledge of nature, or teaches us to interrogate her with that wise caution, and that scrupulous attention which alone can enable us to trace, from her answers, those principles and rules which must always be recognized as genuine. All the works of Hippocrates are written in the Ionian dialect, and contain a great number of Attic expressions. The brevity of his style affords perhaps the best and surest test of the authenticity of his writings, and may serve to distinguish the true from the spurious.

After the death of Heraclides, Hippocrates, having practised several years at Cos, travelled to acquire farther information, visited every city of Greece, and the greatest part of Asia Minor. He travelled twelve years in the Provinces, obtained information of the qualities of different medicinal substances, and of the experiments and discoveries made by others in the cure of diseases. The greater part of his time was spent in Macedonia, Thrace, and Thessaly; and from observations made in those places, the treatise on Epidemics may be said to have originated. During his travels, he is reported to have sojourned at Ephesus, near the Temple of Diana, where he transcribed and arranged the Tables of Medicine, therein preserved. He had previously visited a Temple in the Isle of Cos, which had, at that time, great celebrity, and was known as the Temple of Æsculapius. From the stores of medical knowledge here preserved he drew largely. Lucian tells us that many temples were dedicated to the Grecian Æsculapius, at Pergamus; and an Imperial Greek Coin, in reference to one of these, is preserved in the collection at the British Museum, an engraving of which I have the satisfaction of presenting to my readers. The legend round the head of the coin is M. AYPH. KOMOΔOC. KAICAP. That round the reverse—ЄΠΙ. CTP. K. NIKOMHΔOYC. In the exergue, ΠЄPΓAMHNΩN. NЄOKOPΩN. B. (the first letter of NEOKOPΩN. is quite obliterated.) In these temples the

* Cabanis Coup d'Œil sur les Revolutions et sur la Réforme de la Médecine.

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remedies employed in the several cures were recorded; and thus the modes of treatment were handed down to posterity.

Hippocrates died at Larissa at a very advanced age, variously reported by different writers, at 85, 90, 104, and 109 years. He left three children; two sons, Draco and Thessalus, both physicians; and a daughter, who married Polybus, or Polybius, also a physician, and by whom the writings of Hippocrates were arranged and put forth. He was buried in or near to the city of Gyrtona.

As the first of all physicians that ever lived, so he was honoured beyond all others. His authority has never been disputed, and public honours were never denied to his excellence and learning. The statements made respecting these are not, however, to be regarded as certain. They have been very generally reported; but they rest almost entirely upon tradition. His fame was doubtless great, and induced various princes and sovereigns to obtain his services for their courts. According to Soranus, an uncertain Greek author, a physician living in the time of Adrian and Trajan, in the latter part of the first and beginning of the second century, Hippocrates attended, in conjunction with an aged physician from Cnidus, named Euryphon, the young Perdiccas, son of Alexander king of Macedonia. The prince is reported to have laboured under a slow fever, of which no one could ascertain the cause, but which was sensibly undermining and destroying his health and strength. Hippocrates suspected that a moral cause might be assigned for the disease, and upon attentively observing the demeanour of his patient, he perceived that when in the presence of Phila, who had formerly been a mistress of his father, he suffered considerable emotion. A passion for Phila was therefore pronounced by Hippocrates as the cause of the illness of Perdiccas; and it is added, that the fair Phila being herself not insensible to the situation of the young prince, a very gentle remedy restored him to health. The authenticity of this narrative may reasonably be doubted, as a similar one is reported of Erisistratus at the court of Seleuchus Nicanor. Artaxerxes is reported to have offered to Hippocrates large sums of money, and even entire cities, to engage him to pass into Persia to the relief of the provinces and his armies, which were being destroyed by the plague. The almost exclusive love of country, a distinguishing characteristic of the Greeks, manifested itself in the rejection, by Hippocrates, of those offers which he regarded as the present of an enemy of his country, and he therefore indignantly refused to accept them. His answer to Hystan, the governor of the Hellespont has been recorded: "Say to your master that I have ample riches—that honour will not permit me to accept his proffered gifts to render succour to the enemies of Greece." This message enraged

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Artaxerxes and he menaced the Isle of Cos with destruction, unless the inhabitants would deliver up the physician. The esteem, however, in which he was held by his countrymen, prevented their yielding to the threats of the sovereign, whose anger and menaces were alike fruitless. This subject has been illustrated by the pencil of Girodet, and the picture presented to the faculty of medicine of Paris. It has been engraved by Massard. Galen and Plutarch mention the anecdote. Stobæus also relates it, but substitutes the name of Xerxes for Artaxerxes, which must be an error, as Xerxes was dead before Hippocrates came into the world.

It is reported, that the people of Athens decreed a crown of gold, a right of citizenship, and a free education to the youth of Cos, as of the Athenians themselves, to mark their estimation of the genius and talents of Hippocrates, in having stayed the plague. The Illyrians are also said to have offered Hippocrates large sums of money to visit their country, which was being desolated by the plague. The sagacity of the physician had led him to observe that from the prevalence of certain winds at that particular season of the year, the epidemic would be transferred to Greece—his patriotism, therefore, determined him to remain in his native country. The genius of observation which produced this determination, led him also to prepare for the evil. He drew up regulations to arrest the progress of the disease, sent his disciples into all the cities, and consulted the physicians as to the conduct necessary to be pursued upon its appearance.

To neither of these statements is implicit reliance to be given. The best authorities give to Acron the merit of having stayed the plague at Athens, by the burning of piles of wood near to the infected persons. Dr. Henderson questions whether Hippocrates was at Athens during the time of the great plague. Soranus, his biographer, upon whose narrative, however, little confidence can be placed, affirms that Hippocrates checked the plague, and Galen agrees with him in this respect. It is, however, worthy of note, that Thucydides is silent on this point, and he was an eye-witness of the ravages of the pestilence. It is not improbable that the honours said to have been bestowed upon Hippocrates by the Athenians, might have been for services rendered during another pestilence. M. Houdart conjectures the plague treated of by Hippocrates to have appeared at Thasos, an island in the Grecian Archipelago. M. Le Clerc also remarks, that we are in ignorance as to the plague which is said to have prevailed in Illyria. Dr. Ackermann* has expressed a similar opinion, and conjectures the statements to have been invented after the death of Hippocrates, and to have been

* Fabricii Biblioth. Græca, cura Harles, tom. II. p. 512.

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ascribed to him by the Dogmatists. That the fame of Hippocrates should increase by such conduct (if the circumstances are to be credited) cannot be a matter of surprise; and we are told that the knowledge of his excellence prevailed to such an extent, that the senate of Abdera solicited Hippocrates to visit their renowned philosopher, Democritus, in his solitude, under the impression that he was afflicted with insanity. Hippocrates is said to have paid this visit, convinced the people of Abdera of their error, and refused to receive ten talents which were offered to him for his services upon this occasion. It must be observed that the account of this interview is not supported by any satisfactory evidence. Reland states the letter, in which the visit of Hippocrates to Democritus is related, to be the composition of Epictetus. The following translation of this letter may not be uninteresting to the reader:—

"Our city, Hippocrates, is in very great danger, together with that person, who we hoped would ever have been a great ornament and support to it. But now, O ye gods! it is much to be feared, that we shall only be capable of envying others, since he, through extraordinary study and learning, by which he gained it, is fallen into sickness, so that it is much to be feared, that if Democritus become mad, our city will become desolate. For he is got to such a pitch, that he entirely forgets himself, watches day and night, laughs at all things little and great, esteeming them as nothing, and spends his whole life in this frantic manner. One marries a wife, another trades, another pleads, another performs the office of a magistrate, goeth on an embassy, is chosen officer by the people, is put down, falls sick, is wounded, dies. He laughs at all these, observing some to look discontented, others pleased; moreover, he inquires what is done in the infernal places, and writes of them; he affirms the air to be full of images, and says, he understands the language of birds. Rising in the night, he often sings to himself; and says that he sometimes travels to the infinity of things, and that there are innumerable Democritus's like him: thus, together with his mind, he destroyeth his body. These are the things which we fear, Hippocrates; these are the things which trouble us. Come, therefore, quickly, and preserve us by your advice, and despise us not, for we are not inconsiderable; and if you restore him, you shall not fail either of money or fame. Though you prefer learning before wealth, yet accept of the latter, which shall be offered to you in great abundance. If our city were all gold, we would give it to restore Democritus to health: we think our laws are sick, Hippocrates; come then, best of men, and cure a most excellent person. Thou wilt not come as a physician, but as a guardian of all Ionia, to encompass as with a sacred wall. Thou wilt not cure a man, but a city, a languishing senate, and prevent its dissolution; thus becoming our law-giver, judge, magistrate, and preserver. To this purpose we expect thee, Hippocrates; all these, if you come, you will be to us. It is not a single obscure city, but all Greece, which beseecheth thee to preserve the body of wisdom. Imagine, that learning herself comes on this embassy to thee, begging that thou wilt free her from this danger. Wisdom is certainly nearly allied to every one, but especially to us who dwell so near her. Know for certain, that the next age will own itself much obliged to thee, if thou desert not Democritus, for the truth which

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he is capable of communicating to all. Thou art allied to Æsculapius by thy family, and by thy art; he is descended from the brother of Hercules, from whom came Abderas, whose name, as you have heard, our city bears; wherefore, even to him will the cure of Democritus be acceptable. Since, therefore, Hippocrates, you see a most excellent person falling into madness, while the ordinary unlearned people of Abdera enjoy their wits as formerly; and that even they who were before esteemed foolish, should now be most capable of discerning the indisposition of the wisest person. Come, therefore, and bring along with you Æsculapius, and Epione, the daughter of Hercules, and her children who went in the expedition against Troy; bring with you receipts and remedies against sickness: as the earth plentifully affords fruits, roots, herbs, and flowers to cure madness, she can never do it more happily than now for the recovery of Democritus. Farewell."

No one appears to have appreciated more highly, or more correctly, the qualities necessary in the practitioner of medicine, and the course of study requisite for such a destination than Hippocrates. If the book *De Arte* is to be considered genuine, it affords the most ample evidence of the serious importance he attached to his profession. He expressly remarked, that "it is the business of a physician to make new discoveries in science, or to perfect such as are already made, rather than to spend his time in censuring or depreciating others." He felt it to be *the most excellent of all arts.* In his day, however, as in our own, pretenders were abundant, and these the great father of physic spared not. He traces this calamity from the variance of practice amongst physicians themselves, particularly as manifested in the treatment of acute diseases; and infers that, as it will appear to the vulgar that physicians have no certain method to pursue, medicine exists not as an art. Dr. Barker questioned the justice of this inference, and contended that the very disagreement among physicians was a proof of the reality of the art. The difficulty upon this point is, however, easily solved, when we consider that there exists a rule to which all must bow, namely, *that a physician should be the minister of nature.* The history of physic shows how difficult it is to mark the boundaries between the provinces of art and nature: hence various sects have arisen, some attributing every thing to nature and despising the efforts of art, whilst others have continually interfered with all the operations of nature, and endeavoured to regulate them entirely by art. Extremes are alike hurtful, and are injurious to the advancement of science. Nature is a term to which no definite meaning is attached by the ancient medical writers. Some look upon it as passive, as consisting simply of the elements mixed together in the constitution of the body,* and others as an active principle, the faculty which governs

* Hippocrates de Natura Hominis.

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the animal—that self-moving power which is the cause of the formation, production, and perfection of the animal.* The stoics called it an *artificial fire.*

It was an axiom of Hippocrates, that nature cures diseases, Νόσεων Φύσιες ἰητροι. Galen has given an admirable commentary on this opinion. No physician more closely or diligently studied nature than Hippocrates; hence his practical precepts have ever been esteemed in the highest degree. The nature and phenomena of diseases were observed by him with the greatest accuracy and attention, as the safest means of ascertaining their origin and causes, and the surest indications of adopting correct measures for their cure. He held the end and aim of physic to be either to carry off diseases, or to moderate their violence. His practice appears in all cases to have been regulated upon this basis. He was particular with regard to diet in acute distempers, and regulated it with the greatest precision and sagacity.

The value of the *Aphorisms* of this great master, time cannot abate. They are "models of grandeur of conception and precision of style." Through the whole of them, it has been observed, we may remark that truly universal method—the only one which is adapted to the mode in which our intellectual faculties are exercised; and which, in every art, and in every science, by making the principles flow naturally from the observations that have been collected, transform the deductions from facts into general rules;—a method which has been only very lately reduced to a systematic form; and which, in former ages, could only be guessed at by a few men of comprehensive minds. The aphorisms have repeatedly appeared in many languages, loaded with the commentaries of the respective editors: upwards of 300 editions are enumerated. They are, I believe, uniformly admitted to be genuine, although very differently arranged by various writers. There seems to have been an extraordinary fondness for putting them into Latin verse. There are no less than nine editions of this kind, by various authors, in the library of the British Museum. They are also to be found in Greek and in French verse. I have seen many others. The first aphorism displays in a striking manner the mind of this distinguished physician:—"The brevity of human life is insufficient for the full consideration and thorough knowledge of a science like medicine, which admits even the evidences of long and hazardous experience with diffidence and caution, and adds to great inherent difficulties, the necessity of attending to many external duties and observances relative to those concerned in its success."

* Galenus de Temperamentis.

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Of the importance of the profession in his estimation some idea may be formed from the *oath* which he held to be necessary to be taken upon adopting it:

"I swear by Apollo the physician, by Æsculapius, by his daughters Hygeia and Panacea, and by all the gods and goddesses, that to the best of my power and judgment I will faithfully observe this oath and obligation. The master that has instructed me in the art I will esteem as my parent, and supply, as occasion may require, with the comforts and necessaries of life. His children I will regard as my own brothers; and if they desire to learn, I will instruct them in the same art without any reward or obligation. The precepts, the explanations, or whatever else belongs to the art, I will communicate to my own children, to the children of my master, to such other pupils as have subscribed to the physician's oath, and to no other persons. My patients shall be treated by me, to the best of my power and judgment, in the most salutary manner, without any injury or violence; I will neither be prevailed upon by any other to administer pernicious physic, or to be the author of such advice myself. Cutting for the stone I will not meddle with, but leave it to the operators in that way. To whatsoever house I am sent for, I will always make the patient's good my principal aim; avoiding, as much as possible, all voluntary injury and corruption. And whatever I hear or see in the course of a cure, or otherwise, relating to the affairs of life, nobody shall ever know it, if it ought to remain a secret. May I be prosperous in life and business, and for ever honoured and esteemed by all men, as I observe this solemn oath; and may the reverse of all this be my portion, if I violate it, and forswear myself."

The authenticity of this oath (Ορκος) has been questioned. Meibomius, Fœsius, and other able critics, recognize it as genuine; but Mercurialis, Schulze, and Sprengel, attribute it to the school of Alexandria, because no separation between physic and surgery existed prior to that time. It is worthy of notice that Galen makes no mention of it. MM. Jourdan and Boisseau have remarked that if the oath is to be regarded as authentic, it must be looked upon as the most ancient document of medical police upon record among the Greeks. Those to whom the oath had not been administered were not to be instructed in medicine.

The works of Hippocrates, as far as they have been handed down to us, present a body of information, the result of extensive and acute observation; and it is impossible to refer to them without feeling both surprise and admiration, that, in an age distinguished for speculation and conjecture, he should present to us the most perfect picture of artless simplicity, though adorned with all the learning and skill of the philosophers of Greece.

The object of Hippocrates appears to have been to demolish a false system of philosophy which prevailed in his time upon the subject of medicine, and to erect one upon the observation of nature; in short, he became the founder of the Dogmatists, or the Rational System of Medicine.

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The monographs of disease depicted by him are models for imitation; they embrace all that is necessary to be known respecting them; they detail the previous, the present, and the future symptoms; they exhibit the character of the malady in all its shapes and forms, and render it cognizable to all practitioners. The indications to be observed, and the prognosis to be formed, mark the profundity of his genius and knowledge; yet diagnostics form but little, if any portion of the character of the writings of Hippocrates. Symptomatology constitutes the essence of his labours. To the relief of symptoms his therapeutics are applied; he has no specific—a most remarkable circumstance, when the prevalent superstition of the people of his country at the time in which he lived is taken into consideration. Dietetics formed a very prominent part of the system of treatment by Hippocrates; and of this branch of science he may be looked upon as the founder: before his time nothing of any value had been written on Dietetics.

Of the anatomical and physiological knowledge of Hippocrates little can said. It may be conjectured that he never dissected a body for the purpose of anatomical investigation; and that whatever information he possessed on this head, was the result of accident rather than design. The treatise on fractures and luxations, however, exhibits a remarkable knowledge of the structure of the bones, their form, position, &c., and the composition of the articulations. The most decisive proof that he derived his anatomy from the inspection of brutes, is to be found in his ascribing cotyledons to the human uterus: the male children he derives from the right side, the female from the left. When he speaks of muscles, he calls them flesh. He knew not the difference between the arteries and the veins. It has been attempted to show that he had some faint knowledge of the circulation of the blood; but it cannot be sustained: he speaks of it as a flux and a reflux in the same vessels. Nerves, tendons, and ligaments are all confounded together. The treatise on the heart attributed to him must have been by another hand.

He divided the consideration of the body into that of solids and fluids, and he regarded health as dependant upon the relative proportion of these, and disease as consequent upon their defect, excess, depravity, &c. The humours he held to be four in number: the blood, phlegm, yellow and black bile. These he connected with the four seasons of the year, and the four ages of man. Thus, he conjectured that a redundancy of blood was most likely to ensue in young people, and at the spring of the year; a predominancy of bile in the middle period of life and in the summer months; a prevalence of black bile, occasioning melancholy, in advancing

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age, and in autumn; and viscidity and superabundance of phlegm in the winter of the year, and the close of human existence. He was particular in his observations on the different temperaments, and their connexion with the vicissitudes of the seasons; and he narrowly watched the effects of air, exercise, sleep, &c., on the operations of the human body.

I think he is entitled to be looked upon as the first to introduce into physiology the Four Elements. In his treatise *De Natura Hominis*, he combats the doctrine of the age as put forth by Xenocrates and Melissus, who regarded the body as proceeding from one entire primitive matter; and particularly contends for the operation of water, earth, fire, and air, in the various operations of the animal body. This work is not entirely the composition of Hippocrates. The doctrine alluded to formed the basis of the system of the Humorists.

His investigations into the nature of Epidemic Diseases, constitute one of the most interesting portions of his works. The description of them in their severest form, is truly beautiful; their peculiar features are forcibly drawn, and the attention of the physician is directed to the most important parts of their character. In this work he exhibits a remarkable instance of candour. He says that of forty-two sick, of which he has given the history in the first and third books, only seventeen recovered—all the others died. Another equally striking example of his honesty is to be found in a statement made by him, relative to his attendance on Autonomus, who had received a blow upon the head; and he avers that he mistook a fracture for one of the sutures of the cranium, and thereby neglected to employ the necessary means, until it was too late to restore the patient.

He made a division of diseases into acute and chronic, and marked their various stages, noting particularly the crisis, or critical days, attendant upon them. His knowledge of disease was most extensive and intimate, and his prognosis marked by most extraordinary acumen.

As to Therapeutics, his first dependance appears to be as regards the diet. His principle of cure may be stated in his own words: "As contraries cure contraries, so evacuation is the remedy for repletion, and repletion for the loss sustained by evacuation; deficiences are to be supplied, and superfluities retrenched; contraction and relaxation are to be treated with their opposites, and fluids moving in improper courses are to be brought back into their own channels." Medicines of the most active kind, hellebore, elaterium, scammony, colocynth, &c., were employed, but always with great circumspection, and attention to the age and strength of the patient. Bleeding, and to a considerable extent, was a practice familiar to Hippocrates. The origin of this most remedial agent is involved in obscurity. The Egyptians, according

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to Prosper Alpinus, practised it both in the arteries and in the veins. Podalirius is cited as the first person by whom bleeding was performed; and the case whence this is deduced, is to be found in the Geographical Lexicon of Stephanus Byzantinus, under the word *syrma*, where it is said that the royal daughter of Damætus had lamed herself by a fall from the top of a house, but that having been bled in both arms, she recovered, and afterwards married Podalirius. Little dependance, however, is to be placed upon this statement, as the whole history of Æsculapius, and his sons Machaon and Podalirius, cannot but be regarded as fabulous. Bleeding, it is generally supposed, was not in use until the Trojan war. The Asiatics, to this day, are exceedingly adverse to bleeding; and the Chinese have always entertained so great an aversion to it, that Dr. Arnot, of Canton, is said to have been the first person who could prevail upon any of those people to be bled. But to return to Hippocrates. Some of his best writings are, perhaps, those which relate to surgery. He appears to have been a skilful operator; and his treatises on dislocations and fractures exhibit traces of no contemptible information upon the bones. He performed all the known operations of his day, with the exception of that for the stone, from performing which he interdicted his pupils, according to the oath already cited. This, probably, arose from the entire possession of the practice by a particular class of persons. The whole of his works are written in a lucid and methodical manner. They are the earliest medical records we possess, and they justly entitle their author to be regarded as the FATHER OF MEDICINE.

Many Lexicons were written to explain the more remarkable words used by Hippocrates. Of these two only, those of Erotian and Galen, have descended to us. The Lexicons of Xenocritus, Callimachus, Bacchius, Philinus, Epiceleustus, Apollonius, Dioscorides, &c., are lost. There are Lexicons of a later period by Herodotus the Lycian, Henry Stephen, Gorris, Fœsius, Pinus, Baillou, and Dieterich. That of Pine is the most useful, and is applicable to all editions of the works of Hippocrates. It is impossible to ascertain whether many of the works ascribed to Hippocrates be genuine or spurious. Most critics are agreed in considering the following indisputably to belong to him:—

1. *The first and third books of the Epidemics.*
2. *The Prognostics.**
3. *The Aphorisms.* The last two books have been much interpolated.

* The order of this work is thought to have been subverted by a later hand. The excellence of Hippocrates was particularly observable in his Prognosis, from which he derived the title of 'divine.' This work contains his observations on the crises in acute diseases.

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4. *The first and second books of the Predictions.* These are also much interpolated.

5. *The Treatise on Air, Waters, and Places.**

6. *The Regimen in Acute Diseases.*†

7. *The Treatise on Wounds of the Head.*

It would be impossible to particularize the several editions. I can merely notice the best of them: the first Greek edition of the works of Hippocrates was printed by Aldus, at Venice, in 1526, in folio. The best Greek and Latin edition is that by Fœsius, published at Geneva, in 1657, in 2 vols. folio. Vander-Lindens, belonging to the Variorum classics, printed at Leyden, in 1665, in 2 vols. 8vo., is not to be so much esteemed, as he took great license in the correction of the text, taken from an inferior edition.

The engraving which accompanies this memoir is from the bust in the British Museum, which was found near Albano, amongst some ruins supposed to have been the villa of Marcus Varro. It offers a very fine specimen of Greek art. It is conjectured to be the head of Hippocrates, as it corresponds with that on a medal which was in the collection of Fulvius Ursinus, and engraved in 1606, in the 'Illustrium Imagines,' and said to have been struck in honour of the great physician, by the people of Cos. The author of the Iconographie Grecque has declared it to be genuine. The bust appears to have been taken at an advanced age, probably not less than eighty years, and he is represented bald, which agrees with the description given of him by Soranus, his biographer. There were similar busts in the Capitoline Museum, in the French collection at the Villa Albani, and in Mr. R. P. Knight's collection.

*Haller questioned, but upon insignificant grounds, the genuineness of this work. It is altogether a fine production, but has probably suffered from the ignorance of copyists. It displays great moral and political, as well as medical knowledge, and treats of subjects of the highest importance in the natural history of man. It may be consulted with equal advantage by the physician, the moralist, and the legislator.

† Much valuable information may be gained by a perusal of this work, even at the present day. The acute practitioner is to be seen in almost every sentence.

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ALEXANDER PHILIP WILSON PHILIP,

M.D. F.R.S. L. & E.

&c. &c. &c.

"Incredibili industria, diligentia singulari."—SALLUST.

THE subject of this Memoir, who has so ably distinguished himself as a Physiologist and a Physician, and who, at an advanced period of life, continues to pursue the objects of his profession with all the ardour and zeal of youth, was born in the year 1772, at Sheethall, an estate of his father's, situated near to the city of Glasgow. His father was Alex^r. Wilson, Esq., and Dr. Philip's change of name arose from his becoming the chieftain of his clan in Scotland. It is one of those which can descend by the female as well as the male line, and he derives this distinction from his mother. It is necessary to state this, as some of Dr. P.'s works were published in the name of Wilson. He received his education at the High School of Edinburgh, under Dr. Adam, the Head Master or Rector, well known to the public as the author of a work on Roman Antiquities. From the age of twelve years his education was superintended by the celebrated Dr. Cullen. He was admitted into the University of Edinburgh, and studied the dead languages under Dr. Hill and Professor Dalzell, and the mathematics and various branches of science under Dr. John Robinson, Professor of Natural Philosophy. In medical science he received instruction from the celebrated professors, Cullen, Black, Monro, Gregory, Duncan, Home, and Rutherford: and, in 1792, he took his degree of Doctor of Medicine. His thesis on this occasion is to be considered as the first step in those researches which characterize his later publications: it was *An Experimental Essay on the Process of Digestion.*

In 1792 he published *An Inquiry into the Remote Causes of Urinary Gravel,* the experimental part of which was afterwards printed in the 6th volume of the Transactions of the Royal College of Physicians, having been

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in 1819 communicated to the College by Dr. Baillie. This paper is in opposition to the opinion of M. Majendie, in respect to the azotic formation of gravel and stone, which it very successfully combats. An hypothesis, *purely* chemical, is not likely to be accurate when it is made to apply to the functions of the human frame; nor are the means directed *only* by chemical views, calculated to subdue or controul those disorders and diseases with which they may be effected. The aid of chemistry is, however, not to be overlooked nor undervalued, but it is not exclusively to be confided in. Dr. Philip has shown that the view of the phenomena taken by the celebrated French Physiologist is too confined, and that the hypothesis he has deduced is not easily reconciled with some well-ascertained facts. He instituted a series of experiments to ascertain the circumstances favourable to the production of lithic acid; and they demonstrate, that slight changes in diet produce very remarkable differences in the state of the urine. These experiments, twenty-three in number, tend to establish—

1. That acid and ascescent ingesta tend to increase the deposition of lithic acid from the urine, and to prevent that of the phosphats.
2. That a diet, composed of a large proportion of animal food, tends to lessen the deposition of lithic acid, and to increase that of the phosphats.
3. That every thing, which promotes the action of the skin, tends to prevent the deposition of lithic acid, and to increase that of the phosphats.
4. That dyspepsia tends to increase the deposition of lithic acid, and to lessen that of the phosphats, both by producing acidity of the *primæ viæ*, and by rendering the skin inactive.
5. That indolence has the same tendency, both by inducing dyspepsia, and by lessening the activity of the skin in proportion as it impairs the vigour of the circulation.
6. That an acid passes by insensible as well as sensible perspiration.

To guard against precipitation of lithic acid, Dr. Philip proposes a preventive plan of treatment, which

"Consists in such an attention to diet, exercise, and a free action of the bowels, as tends to remove and prevent dyspepsia, and to support a due action of the skin, with the use of antacids, of which I have found soap the most effectual."

This paper, which is of real utility, and founded upon ingenious reasoning, concludes with the following sentence:—

"I cannot help thinking, that we have reason to believe, that gravel generally originates in a precipitation of lithic acid in the kidneys, in consequence of a greater than usual quantity of another acid, generated chiefly in the *primæ viæ*, passing by those organs; and that the best plan of prevention is to correct the tendency in the *primæ viæ* to form this acid; to

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support, by means which invigorate the powers of circulation, the action of the skin, by which, in health, any superabundance of acid is thrown off; and, when we find that, notwithstanding such measures, too much acid still passes by the kidneys, to correct it by antacids, before it enters the circulating fluids."

When Dr. Philip had taken his degree at Edinburgh, he came to London, attended the Lectures of Dr. Baillie, and entered as a Physician's pupil at St. George's Hospital. Having completed this essential part of his professional education, he returned to Edinburgh, and there settled as a physician.

In 1795, he published *An Experimental Essay on the Manner in which Opium acts on the Living Animal Body;* and this work had an Appendix, giving a relation of some *Experiments made with a view to determine the manner in which Tobacco acts on the Living Animal Body.* In this work the author particularly notices the peculiar convulsions attendant upon taking an over-dose of opium. In many respects they greatly resemble tetanus. In frogs and rabbits, the animals experimented upon by Dr. P., he observed them to assume the form of a true opisthotonos, without ever having perceived in them the slightest tendency to any other form of tetanus. In this Essay is first stated Dr. Philip's views on the doctrine of the sympathy of nerves, to which he has recourse in accounting for the effects of opium, the operation of which, on the living animal body, he refers to three classes: the first, comprehending its action on the nerves of the part to which it is applied, and which does not differ essentially from that of any other local irritation: the second, its effects on the blood-vessels; that of increasing their action, when applied in small quantity; and that of impairing or altogether destroying their power of action, when applied to them more freely: and the third, when thus applied, producing the same effects which most violent stimuli, immediately applied to the brain do—convulsions and death.

In the summer of 1796, Dr. Philip commenced a course of lectures on Febrile Diseases, and continued to deliver them with illustrative experiments on Physiological subjects until 1799, when his health failed him, and he was obliged to retire from Edinburgh, where his professional prospects were most favourable. He withdrew to Worcester, settled in practice, was appointed physician to the County Hospital, which office he filled during fourteen years, and remained in the city of Worcester, enjoying an extensive practice, until 1820, when he came to London, where he still continues to practise his profession. The Lectures above alluded to, he arranged for publication in a distinct treatise on Febrile Diseases while at Worcester, and this work has gone through four editions. The first edition, of which the first volume appeared in 1799, was entitled *A Treatise on Febrile Diseases, including Intermitting, Remitting, and Continued Fevers; Eruptive Fevers; Inflam-*

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mations, Hæmorrhages, and the Profluvia, &c. The fourth edition was published in 1820, and is condensed into two volumes under a different arrangement—the first treats of *Idiopathic Fevers*—the second of *Symptomatic Fevers.* These were published as distinct works. Dr. Philip contends that inflammation is the only local disease which excites fever, and although Dr. Cullen arranges all local diseases, producing fever, under the three heads of Inflammation, Hœmorrhages, and Profluvia, Dr. P. endeavours to show that the latter two only excite fever in proportion as they are attended with inflammation. He does not agree with Dr. Clutterbuck, that fever is always supported by a determination of blood to the brain, nor with Dr. Armstrong, that such determinations exist chiefly in the Venous System; for he thinks dissection warrants him in referring the determination both to the arterial and venous systems. Dr. P. wholly rejects the doctrine of fever by Cullen. He advocates the principles established by Brown, but he questions the accuracy of his inferences, and he considers the application of the Brunonian doctrine of excitability to explain the phenomena and treatment of general diseases as *altogether unfounded.*

In the Observations on Intermitting and Remitting Fevers, there is a statement made relative to the doctrine of Critical Days—a doctrine that has always been more or less regarded from the time of Hippocrates, who paid great attention to it. The observations on which this doctrine has been founded, Dr. Philip thinks, have been too frequently repeated, to permit us to doubt, that there is a tendency to periodic changes in the fevers of certain latitudes. Admitting the doctrine to be based in truth, it is extremely difficult to assign the cause of these periodic movements in fevers. That generally adopted by the ancients, and founded on the Pythagorean doctrine of the power of numbers, I cannot venture to enter upon—it was espoused by Hippocrates and condemned by Galen, who attributes the crises of fevers to the changes of the moon.

In the introduction to the second part of the work, which treats of Symptomatic Fevers, the author gives an Essay on the subject of Inflammation, its Causes, Nature, Treatment, &c. An Appendix, presenting a Nosological System of Febrile Diseases, and a list of the works of authors referred to, nearly 400 in number, conclude the work.

In 1805, Dr. Philip published *Observations on the Use and Abuse of Mercury, and on the Precautions necessary in its Employment.* These were addressed to the public to correct certain erroneous prepossessions respecting the effects of mercury, which it is not necessary here to refer to. The tract contains many judicious remarks, the truth of which is now generally admitted.

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In the same year, Dr. Philip published *An Analysis of the Malvern Waters*, which he states to be a slight alkaline chalybeate.

In 1807, Dr. Philip published *An Essay on the Nature of Fever, being an Attempt to ascertain the Principles of its Treatment.* The author here treats of the opinions which have prevailed respecting the Proximate Cause of Fever, and endeavours to account for the various phenomena of Fever. He considers the hypotheses of Hoffman and Boerhaave, of Cullen and of Brown—the latter two are treated of at length. He reviews the symptoms of Fever, and believes that all the phenomena may be explained upon the following consideration:

"That, when a debilitating cause is applied to the vital system, the extreme parts of this system lose their tone; that in consequence of this, secretion being impeded, a preternatural stimulus is applied to the heart and larger vessels, which, by exciting them, tends to restore tone to the capillaries, in the same way that an increased action of the larger vessels of an inflamed part tends to restore tone to the capillaries of that part."

The causes of fever he looks upon as more or less directly debilitating the vital system, namely, the heart and larger blood-vessels, whilst others operate chiefly on the circumference, the capillary vessels and others, equally on all parts of the system. According to this view of the subject he regards the treatment as sufficiently obvious. He says,

"There are two indications which may be termed general, because they apply to all fevers and to all their periods, namely, to avoid the excitement of the animal organs, and to excite the circumference of the vital system; and two, which may be termed partial, because they apply only to certain states of fever, namely, to diminish the excitement of the heart and larger vessels when it is above the due degree, and to increase it when it falls below that degree."

An Experimental Inquiry into the Laws of the Vital Functions. 1817.

The subject of this work is so connected with several papers published in the Philosophical Transactions, and the Quarterly Journal of Science, edited at the Royal Institution, that they must all be considered under one head. The following is a list of them:—

1. (Phil. Trans., 1815, p. 65.) *Experiments made with a view to ascertain the Principle on which the Action of the Heart depends, and the Relation which subsists between that Organ and the Nervous System.*
2. (Phil. Trans., 1815, p. 424.) *Some additional Experiments and Observations on the Relation which subsists between the Nervous and Sanguiferous Systems.*

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3. (Phil. Trans., 1817, p. 22.) *On the Effects of Galvanism in restoring the due Action of the Lungs.*

4. (Phil. Trans., 1822, p. 22.) *Some Positions respecting the influence of the Voltaic Battery in obviating the Effects of the Division of the Eighth Pair of Nerves.*

5. (Phil. Trans., 1827, p. 217.) *Some Observations on the Effects of dividing the Nerves of the Lungs, and subjecting the latter to the influence of Voltaic Electricity.*

6. (Phil. Trans., 1829, p. 137.) *Some Observations relating to the Function of Digestion.*

7. (Phil. Trans., 1829, p. 261.) *Some Observations on the Functions of the Nervous System, and the relation which they bear to the other Vital Functions.*

8. (Phil. Trans., 1831, p. 489.) *On the Sources and Nature of the Powers on which the Circulation of the Blood depends.*

9. (Phil. Trans., 1833, p. 55.) *On the Relation which subsists between the Nervous and Muscular Systems in the more perfect Animals, and the nature of the influence by which it is maintained.*

10. (Phil. Trans., 1833, p. 73.) *On the Nature of Sleep.*

11. (Phil. Trans., 1834, p. 167.) *On the Nature of Death.*

12. (Phil. Trans., 1836, p. 343.) *On the Powers on which the Functions of Life in the more perfect Animals depend, and on the manner in which they are associated in the production of their more complicated results.*

13. (Quarterly Journal of Science, Vol. VII., p. 349.) *Reply to some Observations relating to the Inquiry into the Laws of the Vital Functions.*

14. (Ibid. Vol. VIII., p. 72.) *Some Observations relating to the Agency of Galvanism in the Animal Economy.*

15. (Ibid. Vol. IX. p. 251.) *Some Observations relating to the Secreting power of Animals.*

16. (Ibid. Vol. XI. p. 40.) *Some Additional Observations on the same.*

17. (Ibid. Vol. XII. p. 17.) *Some Additional Facts relating to the division of the Eighth Pair of Nerves.*

18. (Ibid. Vol. XIII. p. 96—113, 261—276.) *A Review of some of the General Principles of Physiology, with the practical inferences to which they have led.*

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ALEX. PHILIP WILSON PHILIP, M.D. F.R.S. L. & E.

19. (Phil. Trans. Vol. XIV. p. 91.) *A continuation of the preceding paper.*

From the preceding list, it will be seen that no analysis of the papers can here be attempted; but it will not be without use to refer to them in abstract as embracing important subjects of physiological investigation. Whatever may be the opinion entertained of the justness of the principles drawn from the experiments detailed by Dr. Philip—of his industry, his ability for experimenting, and of the candour and accuracy of his details there can be no question; and his Inquiry must be looked upon as a valuable contribution to medical science. His researches may be divided into two parts, the first of which relates to the heart and blood-vessels, and the principle upon which their action depends, and the relation between the nervous and sanguiferous systems; and the second, as to the laws of the vital functions, and the application of a knowledge of these to the nature and treatment of diseases.

In the first place, Dr. Philip gives a translation of the Report of the Imperial Institute of France, upon the work of M. Le Gallois, *Expériences sur le Principe de la Vie, &c.;* and he proceeds critically to examine it, and to combat the opinions maintained in it. He gives full credit on the whole to Le Gallois for the accuracy of his experiments, but he objects to the inferences which he has drawn from them; and he supports his own views by a reference also to other experiments, which have since been generally admitted to be satisfactory. The results deducible from this division of the subject can only be fairly stated in the author's own words:—

1. "That the vessels of circulation possess a power capable of supporting a certain motion of the blood, independently of the heart.

2. "That the power, both of the heart and vessels of circulation, is independent of the brain and spinal marrow.

3. "That the nervous influence is capable of acting as a stimulus both to the heart and vessels of circulation.

4. "That the nervous influence is capable of acting as a sedative both to the heart and vessels of circulation, even to such a degree as to destroy their power.

5. "That the effect of the sedative is not the result of the excess of stimulus, but, like excitement, the direct operation of the agent.

6. "That the power of the muscles of voluntary motion is independent of the brain and spinal marrow, and that their relation to the nervous system is of the same nature with that of the heart and vessels of circulation, the nervous power influencing them in no other way than other stimuli and sedatives do.

7. "That the cause of the muscles of voluntary and involuntary motion appearing at first view essentially to differ in their nature, is their being excited by stimuli essentially different—the former being always excited by the nervous influence; the latter, though occasionally excited by this influence, in all their usual functions obeying other stimuli.

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8. " That the brain and spinal marrow act, each of them, directly on the heart as well as on the muscles of voluntary motion.

9. " That the laws which regulate the effects of stimuli, applied to the brain and spinal marrow, on the heart and muscles of voluntary motion, are different.

10. " That mechanical stimuli, applied to the brain and spinal marrow, are better fitted to excite the muscles of voluntary motion, and chemical stimuli the heart.

11. " That neither mechanical nor chemical stimuli, applied to the brain and spinal marrow, excite the muscles of voluntary motion, unless they are applied near to the origin of their nerves; and consequently that those muscles are excited by stimuli applied to very minute parts of the above organs.

12. " That both mechanical and chemical stimuli, applied to any considerable part of the brain or spinal marrow, increase the action of the heart, which cannot be increased by any stimulus applied to a minute part of these organs.

13. " That the heart obeys a much less powerful stimulus, applied to the brain and spinal marrow, than the muscles of voluntary motion do.

14. " That stimuli, applied to the brain and spinal marrow, excite irregular action in the muscles of voluntary motion.

15. " That no stimulus, applied to the brain or spinal marrow, excites irregular action in the heart or vessels of circulation, nor is their action rendered irregular by sedatives—unless a blow, which crushes a considerable part of the brain or spinal marrow, be regarded as a sedative.

16. " That the excitement of the muscles of voluntary motion takes place chiefly at the moment at which the stimulus is applied to the brain and spinal marrow, while that of the heart may generally be perceived as long as the stimulus is applied.

17. " That after all stimuli applied to the brain and spinal marrow fail to excite the muscles of voluntary motion, both mechanical and chemical stimuli so applied still excite the heart.

18. " That all the foregoing differences in the effects of stimuli, applied to the brain and spinal marrow on the heart and muscles of voluntary motion, are referrible to the following law:—That the heart is excited by all stimuli applied to any considerable part of the brain or spinal marrow, while the muscles of voluntary motion are only excited by intense stimuli applied to certain small parts of these organs.

19. " That the function of secretion is destroyed by dividing the nerves of the secreting organs.

20. " That it may be restored, after it is thus destroyed, by the galvanic influence.

21. " That lessening the extent of the nervous system by destroying the influence of any considerable part, either of the brain or spinal marrow, deranges the secreting power.

22. " That dividing the spinal marrow does not derange the secreting power.

23. " That the vessels of secretion only convey the fluids to be operated upon by the nervous influence.

24. " That these vessels, like the vessels of circulation, are independent of, but influenced by, the nervous system.

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25. " That the peristaltic motion of the stomach and intestines is independent of the nervous system.

26. " That it is capable of being influenced through it.

27. " That in the stomach of the rabbit, and probably in that of similar animals, the food, when received into the stomach, remains at rest in the central part of this organ, and unmixed with the food previously taken; and that it is changed in proportion as it approaches the surface of the stomach, in consequence of that, previously there, being moved on towards the pylorus.

28. " That the food is most mixed with the fluids of the stomach, and the greatest change is effected in it, in the cardiac end of the stomach.

29. " That the food is much drier, and of a more uniform consistence, its digestion being further advanced, in the pyloric, than in the cardiac end of the stomach.

30. " That the efforts to vomit, occasioned by the division of the eighth pair of nerves, arise from fresh food coming into contact with the surface of the stomach, no longer covered with its proper fluids.

31. " That the muscular power of the stomach remains after the division of the eighth pair of nerves, by which all that part of the food which has undergone the action of the gastric juice is carried into the intestine; undigested food alone remaining in the stomach.

32. " That the secreting power of the stomach is almost as much deranged by destroying a considerable part of the spinal marrow, as by dividing the eighth pair of nerves.

33. " That a similar observation applies to the secreting power of the lungs.

34. " That the stomach and lungs, like the sanguiferous system, are influenced by every part of the brain and spinal marrow.

35. " That the destruction of any considerable part of the spinal marrow lessens the temperature of the animal.

36. " That the galvanic influence occasions an evolution of caloric from arterial blood, if it be subjected to this influence as soon as it leaves the vessels.

37. " That the galvanic influence occasions no evolution of caloric from venous blood, although subjected to it as soon as the blood leaves the vessels.

38. " That there is no evolution of gaseous fluid from arterial blood on its leaving the vessels.

39. " That if caloric be admitted to be a substance, its evolution from the blood being effected by the same means by which the secreted fluids are formed, it must be regarded as a secretion.

40. " That the division of the spinal marrow does not destroy any of the functions of either half of it; the paralysis of the lower part of the body, occasioned by its division, arising from that part having its communication with the principal source of sensorial power destroyed.

41. " That the ganglions are a secondary centre of nervous influence, whose nerves are as extensively distributed as those which proceed from the brain and spinal marrow.

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42. " That the ganglions are the means by which the influence of every part of the brain and spinal marrow is bestowed on the parts which we have found influenced by every part of these organs.

43. " That the influence of every part of the brain and spinal marrow is bestowed on all parts directly or indirectly necessary to the due performance of secretion, this function requiring the influence of every part of these organs.

44. " That the position of the ganglions, and the distribution of their nerves, tend to confirm the view of their use afforded by the above experiments.

45. " That we have reason to believe, that the great sympathetic nerve arises from the spinal marrow.

46. " That the proof of the vessels possessing a principle of motion, independent of their elasticity, which bears the same relation to the nervous system with the excitability of the heart—not only as far as respects the kind of influence which they derive from that system, and the way in which it is supplied to them, but also as far as respects the purposes for which it seems to be bestowed on them—affords a strong argument for believing that this power is of the same nature with that of the heart.

47. " That the various functions of the animal body may be divided into sensorial, nervous, and muscular.

48. " That the sensorial power is not wholly confined to the brain, nor the nervous power to the spinal marrow; both powers in a greater or less degree residing in both organs.

49. " That the division of the brain into cerebrum and cerebellum seems to relate to the sensorial functions; since the muscles, both of voluntary and involuntary motion appear to bear the same relation to both.

50. " That what we call death is the ceasing of the sensorial power alone; the nervous and muscular powers still continuing.

51. " That in the function of respiration, the sensorial, nervous, and muscular powers, are combined.

52. That it is owing to the ceasing of respiration, that the destruction of the sensorial power is followed by that of the nervous and muscular powers.

53. That whatever be the cause of death the functions cease in this order, unless the sensorial or nervous system be so impressed as instantly to destroy all the functions."

From the numerous inferences thus detailed, Dr. Philip draws the following conclusions:—

" The power of the muscles, both of voluntary and involuntary motion, is independent of the nervous system, and arises from the mechanism of the muscular fibre itself. Both these sets of muscles are equally capable of being excited by the nervous influence; but while this influence is the sole stimulus to which the muscles of voluntary motion are subjected, it acts only occasionally on the muscles of involuntary motion, which are excited in all their usual actions by stimuli independent of it, and consequently of the will. When the latter muscles are excited by the nervous influence, it is not applied to them in the same way as to the muscles of voluntary motion, to which it is sent directly from the brain and spinal marrow, each muscle receiving its nervous influence from a particular part of these organs; while to the muscles of involuntary motion it is sent through the great chain of ganglions, each muscle receiving its nervous influence from every part of the brain and spinal marrow

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"The excitement of the muscles of involuntary motion, in all their usual functions, appears to be rendered independent of the nervous influence, because these functions require a more uniform excitement than could have been derived from this source; and they appear to be subjected to the influence of the whole brain and spinal marrow, because they are directly or indirectly subservient to the function of secretion, which requires for its due performance the influence of every part of these organs; for the nervous influence is not supplied by the brain alone, the spinal marrow supplying a necessary part of it, and that independently of any operation of the brain on this organ."

"In the function of secretion, the sanguiferous system appears only to supply the fluids to be operated upon by the nervous influence; and the evolution of caloric, which supports animal temperature, is also effected by the action of this influence on the blood.

"We have reason to believe that the nervous influence is the galvanic fluid, collected by the brain and spinal marrow, and sent along the nerves; galvanism being, not only of all artificial means of exciting the muscles, that which seems best adapted to this purpose, but capable of both forming the secreted fluids, and causing an evolution of caloric from the blood, after the nervous influence is withdrawn.

"The nervous power is not more distinct from the muscular, than it is from the sensorial power. We find the first capable of its functions after the last is withdrawn.

"The only function essential to animal life, in which the sensorial power is concerned, is respiration; and consequently it is by the interruption of this function that the removal of the sensorial power proves fatal, except where the sensorium is so impressed as immediately to destroy all the functions.

"The sensorial power appears to be the last which is produced, and the first whose operation ceases."

The Inquiry has now reached a *fourth* edition, in which the physiological as well as the practical part is much extended. The principles and practice are here conjoined—the one illustrated by the other, and the reader is thereby enabled to estimate the value of the Inquiry. The relation which the various functions bear to each other, and the tendencies of continued states of chronic disease are fully pointed out to mark the curative stages of of a numerous class of diseases. From the experiments detailed, it appears—

"That while the powers of the nervous system, properly so called, perform but a subordinate part in the functions of the sensitive system, only affording the means of conveying to the muscles of voluntary motion the dictates of the will, in those of the vital system they supply the leading power—that to which, if we except the principle of vitality itself, all its other powers are subordinate; yet it is in this system, we have seen, that the powers of the brain and spinal marrow, and of the nerves by which their influence is conveyed, have been overlooked, or seen but in such irregular glimpses, as made no general impression on our doctrines, and left our practical inferences wholly unaided by a knowledge of the seat of the leading power in the vital system. Can we be surprised, then, that many diseases, having their immediate origin in the organs of this power, should in their precursory stages be obscure; an evil greatly increased, we shall find, by the insensibility of these organs, and by many other vital organs being ill supplied with nerves of sensation."

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These important practical objects Dr. Philip proceeds to discuss with considerable precision and minuteness. It will readily be seen that the publication of this edition must completely supersede all former ones, as the additional observations are embodied in the Inquiry, and many of the illustrations are entirely new. Of the practical part, I regret that I have not room further to enter into. I must, therefore, refer the reader to the ample details afforded by the volume, which gives the result of the author's extended practice.

A Treatise on Indigestion, and its Consequences, called Nervous and Bilious Complaints; with Observations on the Organic Diseases in which they sometimes terminate. The first edition of this work appeared in 1821; and the fact of its having reached a seventh, in 1833, fully attests the value attached to it by the profession and the public. To the former, however, the work is principally addressed: its style, and the manner in which the subject is treated, is not adapted to general perusal. There are few subjects upon which so many works have been written, as on that of Indigestion. The great number of diseases, which take their rise from derangements of the alimentary organs necessarily produce them; and the treatise of Dr. Philip is an elaborate one, upon all the varieties of a truly Proteian malady. He divides the disease into three stages, though these, perhaps, are not very clearly to be defined. In the first and second he treats of the symptoms, causes, and treatment; then of the more protracted cases of Indigestion, of Symptomatic Indigestion, of the influence of Indigestion on other Diseases; and, finally, in the third stage of Dyspeptic Phthisis, and Habitual Asthma. The Symptomatology is minutely laid down, and cannot here be abridged; but it is right to notice, that Dr. Philip's chief object appears to be to enter more fully than has been done, by preceding writers, into the manner in which the sympathy of parts influences the phenomena—treatment of diseases, and thus to observe the laws by which it is regulated. This, it will readily be admitted, is a matter often attended with great difficulty—close observation and the most patient attention is requisite to unveil, in any degree, the obscurity in which it is often involved. This inquiry forms the most interesting and most valuable part of Dr. Philip's work, inasmuch as it enables the practitioner to direct his mode of treatment agreeably to rational principles.

In considering the causes of indigestion, Dr. P. is led to a physiological disquisition on the process of digestion, in which the opinions of various authors are investigated, and the author's experiments on the subject detailed. He found that when the eighth pair of nerves was divided in the neck of a rabbit, and one portion of each nerve folded back, immediately after the

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animal had taken a full meal, after a fast of whatever continuance, none but undigested food was found in its stomach, provided it had been allowed to live for a certain number of hours, after the operation; but that if without the division of those nerves, the rabbit be killed at any period after eating, however long, some food was always found in its stomach, reduced apparently to the state in which it is sent into the intestine, and from the continued secretion of the fluids of the stomach, if the fast had continued for many hours, mixed with a greater than usual proportion of them. Dr. Philip was led, from these results, to extend his experimental researches upon a very wide scale, and to examine the stomach of upwards of a hundred rabbits immediately after they had been killed, in the usual way, which is by a blow upon the back part of the head, at various periods of digestion. He found that the new food received into the stomach is never mixed with the old; that the former is always to be found in the centre of the organ, surrounded on all sides by the old food, except that on the upper part, between the new food and the smaller curvature of the stomach, there is sometimes little or no old food. And he found, by more than twenty trials, that if the old and the new food be of different kinds, and the animal be killed before a great length of time has elapsed after taking the latter, the line of separation between them is perfectly evident, so that all the old may be removed without disturbing the new food. He found that the nearer the food lies to the surface of the stomach, the more it is digested. This was true, even with regard to the food in the small curvature, compared with that nearer the centre, and the food which touches the surface of the stomach is more digested than any other found in the same part of the stomach; but, unless the animal had not eaten for a great length of time, the food in contact with the surface was in very different stages of digestion in different parts of the organ. It was least digested in the small curvature, more in the large end, and still more in the middle of the great curvature. These observations apply to the large end of the stomach; the food in the pyloric portion was always found in a state very different from that just described, it was more equally digested, the central parts differing less from those which lie near the surface. The mode in which the food passed on during its stages of digestion is also shewn by Dr. Philip's experiments. He found that in proportion as the food digested, it was moved along the great curvature, where the change in it was rendered more perfect to the pyloric portion. Thus the layer of food lying next the surface of the stomach was first digested, and in proportion as this had undergone the proper change, and was moved on by the muscular action of the stomach, that next in turn succeeded, to undergo the same change.

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The physiological considerations, to which I have thus alluded, led the author to regard the remote and the immediate causes of indigestion, and to mark the treatment which in its several stages this disease requires. The mere enumeration of these would extend this Memoir beyond its assigned limits; I must, therefore, refer the reader to the work itself, which in its dietetic as well as medicinal rules, deserves particular attention. The chapter devoted to the more protracted cases of indigestion introduces us to some valuable observations on the mode of examination by pressure on the regions of the stomach and duodenum, of the importance of which no one can entertain a doubt. To ascertain the condition of the first intestine it is necessary to make the examination with the patient in an erect posture—when placed horizontally, the other viscera preclude a satisfactory examination.

In the last edition of Dr. Philip's work, under the arrangement of the third stage of indigestion, the author treats of Dyspeptic Phthisis, upon which subject he had communicated a paper to the Medico-Chirurgical Society, and another, on Habitual Asthma, alluded to in the Philosophical Transactions, for 1817, with observations on the advantage arising from Galvanism in such cases. The disorder of the pulmonary organs, produced by disease of the digestive functions, he considers as of great frequency in this country. He regards it as of two kinds: one in which the nerves alone, and another in which both the nerves and vessels, are affected. Of these, he looks upon the latter as by far the most frequent. The former he designates Habitual Asthma, the latter Dyspeptic Phthisis.

In 1827, Dr. Philip published a separate work *On the Treatment of the more Protracted Cases of Indigestion.* The entire substance of this work is included in the seventh edition of his work on Indigestion just noticed.

A Treatise on the Nature and Cure of those Diseases, either Acute or Chronic, which precede Change of Structure; with a view to the Preservation of Health, and, particularly, the Prevention of Organic Diseases. The title of this work, which was published in 1830, embraces every disease within the province of the physician, and it would be vain to attempt an analysis of it. It is, however, intended by the author for general, rather than professional, perusal. The utility of such publications is rather questionable. The work embraces the chief of the subjects treated of in the Inquiry into the Laws of the Vital Functions, and the various papers in the Transactions of the Royal Society, published in illustration of this subject. One statement, put forth in it, deserves, in a professional point of view, to be mentioned, as it is contrary to the opinion generally entertained

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on the subject of pulmonary consumption, and this is in the chapter *On the Morbid Affections which precede Change of Structure in the Lungs.* Dr. Philip questions the original existence of tubercles in the lungs, and for this reason—he has found that, in the most consumptive habits, the first symptoms can generally be checked, and perfect health re-established. He does not subscribe to the opinion, that the predisposed are born with the seeds of tubercles in their lungs, and that no other can become victims of this disease. My experience is the reverse of that of Dr. Philip; for I have more than once seen tubercles in the lungs of children, and young subjects, who have not died of pulmonary consumption. Dr. P. assumes, that disease of the lungs never exists without betraying itself by evident disorder of their function; and that, at the commencement of the symptoms, the lungs contain neither tubercles nor their seeds. "Tubercles," (he believes) are always the consequence of some occasional cause, and, in the first threatenings of the disease, may generally be prevented, however strong the disposition may be, by correcting the symptoms which precede them." This local origin of tubercles must be looked upon as exceedingly doubtful.

In 1832, he published *Observations on the Nature of Malignant Cholera.* The symptoms characteristic of this disease are prefaced by some general observations on the Vital Functions—on the sensorial, nervous, and muscular powers—as necessary to a clear understanding of the disease, which appears to Dr. Philip to be one "depending on those laws of our frame, that are capable of being traced by experiment, and admit of being better understood than many with which we have long been familiar." Much, however, yet remains to render the subject of Malignant Cholera intelligible to the practitioner, and much more, I fear, to establish the existence of a safe and effectual remedy. Cholera may fairly be said to have hitherto baffled the medical profession.

In the same year, Dr. Philip published *On the Effects of Minute Doses of Mercury in restoring the Vital Functions.* The principal part of this work had previously appeared in the Medical Gazette. In it he considers the *modus operandi* of the medicine, locally and generally.

To the Transactions of the Medico-Chirurgical Society, Dr. Philip has contributed three papers:—

1. (Vol. III. p. 290.) *History of a Severe Affection of the Organs of Respiration.* Dissection displayed a portion of the lungs to be in a state of hepatization, and a very large quantity of water had accumulated in the chest. The pericardium was universally adherent to the heart, although no diagnostic symptom of inflammation of that organ had at any time been apparent.

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2. (Vol. VII. p. 499.) *Some Observations on a Species of Pulmonary Consumption, very frequent in Great Britain.* This is the paper alluded to in a preceding part of this Memoir—it is upon the Dyspeptic Phthisis.

3. (Vol. XII. p. 397.) *Some Observations relating to the Powers of Circulation, and the State of the Vessels in an inflamed part.* The subject of this paper is embodied in the Inquiry into the Laws of the Vital Functions.

In 1835, Dr. Philip was appointed to deliver the Gulstonian Lectures at the Royal College of Physicians. He chose for his subject, *The more obscure Affections of the Brain, on which the Nature and Successful Treatment of many Chronic Diseases depend.* These were published in the Medical Gazette, and afterwards as a separate treatise. The principles of treatment herein laid down will be found in Dr. P.'s physiological works.

There are various papers by Dr. Philip in the volume of the Medical Gazette for 1831, consisting principally of a controversial series with Dr. Prout, relative to the application of Chemical Science to explain the Phenomena and Cure of Disease; and in the volume for 1837 three papers *On the Practical Inferences which result from some late Physiological Investigations, respecting the Laws of the Vital Functions in the more perfect Animals.* This subject is more amply treated in the last edition of his work upon the Vital Functions.

It remains only to state, that Dr. Philip is a Fellow of the Royal Societies of London and Edinburgh, and a Fellow of the Royal Colleges of Physicians of London and Edinburgh. He is also a member of various other Scientific Institutions, both at home and abroad.

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ALEX. PHILIP WILSON PHILIP, M.D. F.R.S. L. & E.

Since the publication of the Memoir of this distinguished Physician and Physiologist, I have received the following letter, and, as it directs attention to the Practical, and therefore the most important, part of the Inquiry entered upon in the Physiological Dissertations of Dr. Philip, I herewith submit it to the reader :—

My dear Sir, Cavendish Square, Apr. 6th, 1839.

It appears from circumstances, which you have not failed to mention, that from a very early period, the great influence of the digestive organs on the sympathies of our frame attracted my attention, and the circumstance of my mind having been so long directed towards removing the inconsistencies which prevail respecting the general laws of our frame, have constantly tended still farther to demonstrate that influence. It is to this cause, as far as I am capable of judging, that we may attribute, that, while you do me the honour of agreeing with me in other points of doctrine, you differ from me respecting the nature of pulmonary consumption. Were this merely a speculative point, I should not have considered myself entitled thus to direct your attention to it; but, as I believe, that the consequences of the most fatal disease of this country depend on it, I cannot feel easy without stating the facts on which my opinions are founded. You agree with some writers of great respectability, that the seeds of pulmonary consumption are born with us, and, consequently, that this disease does not admit of an absolute preventive. It is the part of the assertor to adduce the proofs of his opinion. What proof have we that the seeds of pulmonary consumption are born with us? The only fact I know, which has been mentioned as such, is that which you state, that in the fœtus we sometimes find tubercles. But tubercles, whether in an incipient or suppurative state, are not the seeds of the disease, but the disease itself, the one in the first, and the other in the fatal stage; and only prove that, even in the fœtal state, we are liable to this formidable disease.*

The following are the most important results of all the observations I have made on pulmonary consumption, to which my attention was early directed; that there are two species of this disease, one an original affection of the lungs, and often from the commencement, of a fatal tendency; the other symptomatic; and it is a striking fact, and shows how far essentially different is the nature of the two cases, that in the practice of more than thirty years, I have never seen the two forms of the disease in the same family. I can even go farther, for I cannot recollect one instance of the original disease of the lungs having appeared in two individuals of the same family. According to my experience, it cannot be regarded as an hereditary disease. The symptomatic is the common form of the disease; and that, by which whole families are cut off, yet this is the disease which is almost always curable in its earlier stages. My experience has furnished me with but one case which is beyond our controul; namely, when it originates in that state of the brain which arises from a settled grief, in consequence of which, from the sympathy between the central organs of the vital and sensitive systems, the affection of those of the latter spreads to the former. I have found this species of pulmonary consumption curable in all other cases, provided the disease has not been allowed to continue till the structure of the lungs is injured, which in general does not happen at so early a period as in the original disease of the lungs; and I have, in many instances, seen the disease wholly and permanently banished from families where it had, one after another, proved fatal to many of its members. Even this species of consumption cannot strictly be regarded as hereditary, for it is only produced when other causes combine with the weakness of lungs, respecting the hereditary tendency of which there can be no doubt.* The cause which combines with this hereditary affection in producing it, is always a continued fret of nerve, either from a mental or bodily cause, in nineteen cases in twenty, or more, from the latter; and in these kingdoms, in by far the majority of cases, from the continuance of a distended state of the liver, a disease which may be regarded as the endemic of this country, but which appears, from what is said in the latter editions of my "Treatise on Indigestion," can always be removed, and the affection of the lungs consequent on it, prevented.

Thus, there is reason to believe, that when the proper treatment becomes general, the disease, which at present annually destroys so many thousands in this country, will be comparatively rare.

I remain, my dear Sir, very truly, your's,

A. P. W. PHILIP.

ERRATA IN THE MEMOIR

Page 1, line 4, for *Sheelhall*, read *Shieldhall*; line 8, for *from his mother*, read *from his father's mother*

* See the third part of my Inquiry into the Laws of the Vital Functions. Fourth Edition.

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GEORGE GABRIEL SIGMOND, M.D. F.S.A.

&c. &c. &c.

"Though a man cannot invent new things after so many, he may do a welcome work yet, to help posterity to judge rightly of the old."—BEN JONSON.

GABRIEL SIGMOND, Hereditary Posner of Posnania, lost his life and his property in resisting the partition of his native country, Poland, by the sovereigns of the north. His exiled family were obliged to seek, in foreign lands, an asylum, and the means of existence. His eldest son settled upon the banks of the Savannah, and became an extensive landed proprietor in the United States. His second son, Joseph, landed in Devonshire, pennyless, and unknown. The elegance of his manners, his extensive information, and the generous sympathy which the wrongs of his father-land had excited in the minds of Englishmen, secured him the friendship and the fostering kindness of the nobility and gentry of the county: amongst his warmest friends, was Mr. Patch, the eminent Surgeon of Exeter, who strongly recommended him to study the anatomy and surgery of the Teeth, a subject which had, at that period, excited little attention; and to devote his mind to the cultivation of a branch of knowledge, which might secure him an independent and honest subsistence. In conformity with this recommendation he commenced his career, as an Operative Dentist, and was singularly successful in his practice; not only did he acquire a thorough acquaintance with dental surgery, but from his examination of the mechanism and structure of the organs, destined for the performance of such important functions for nourishment, and for the communication of thought, he was enabled to construct artificial teeth upon a plan before unknown; and he was the inventor of the gold springs, by which sets of teeth are united in the two jaws, and of the gold plates, which now supply the place of ligatures.

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He published a Treatise, at a later period, on the Management of the Teeth, which obtained for him a high character. He settled in the city of Bath, where, by industry, together with an unceasing exercise of humanity and generosity, he acquired a large fortune, and a high reputation. His house was the rendezvous of the most distinguished persons; and he was honoured by the patronage of the Prince of Wales, of the Duchess of York, and a large proportion of the nobility and gentry of the country, who were interested by his misfortunes, and pleased with his skill. Bath owed much of her prosperity to his exertions, and his hospitality annually brought to his house all the foreign musical talent; Rauzzini, Billington, Mara, and Braham, were induced to visit Bath, and to keep up the fashionable character of that once attractive city.

He married Miss Catherine Mosely, of Countess Wear, County of Devon, and his only son, GEORGE, the subject of the present memoir, was born in the year 1794. He received a classical education, at the Foundation School at Bath, and at Hyde Abbey, Winchester. At a very early age, he was distinguished for his classical attainments; and obtained, at the school at Winchester, on three occasions, public prizes, at the annual recitations. He had a singular turn for inquiries into the animal economy; and the circumstance that led to his father's selection of the medical profession for his future career was, that, at the age of fifteen, having passed the evening with Dr. Sims, the President of the Medical Society, who was discussing the discovery of the circulation of the blood by Servetus, on the following morning he laid out his pocket-money in pursuing the investigation, and giving the little he possessed to individuals who would permit him to open a vein, and ascertain the truth of the experiments which had been narrated. He was sent to the University of Edinburgh, in the first instance, where he was honoured by the notice of Dr. Gregory, of Dr. Duncan, and of Dr. Hamilton. He likewise entered at Caius College, Cambridge, and kept several terms; but finding that he could not acquire, in that University, medical knowledge, he removed to Jesus College, that he might be enabled to keep his terms, so as not to interfere with his gathering the information, which was only, at that period, to be acquired either at the London Hospitals, or at the Medical Schools of Scotland. He became a student at St. George's Hospital, London, and was particularly noticed for his assiduity and attention. He was especially observed by Dr. George Pearson, who acknowledges, in some of the papers published by him, of the various cases of interest which presented themselves at that Institution, that he had received from his young pupil the assistance which enabled him to draw up his reports with correctness and care. In the year 1814, before he was twenty

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years of age, he took his degree at the University of Edinburgh; and received, from Dr. Gregory, the highest compliments for his Thesis *De Aquis Thermalibus apud Bathonias*, for its beautiful Latinity, and for its original views. His Royal Highness the Prince Regent was, at the request of his father, graciously pleased to accept the dedication, which was couched in singularly felicitous language, and may well be admired for its strength and vigour of expression, and for its happy allusion to the events that had just occurred. The thesis is commenced, after a brief apology for "Juveniles primitias certe non perfectas ingenio sed elaboratas industria," with a classical view of the Roman predilection for Baths. He proceeds to a description of the City of Bath, its healthy situation, and the charms that attract the Invalid, its total freedom from epidemic disease, the salubrity of its air, and its healthy locality. He points out the different fountains from which the hot water is derived, and thinks that the four principal ones do not differ in their sensible qualities from each other, though their temperature is not precisely the same; that which is called the King's Bath being the hottest; it is about 112 degrees of Fahrenheit. He briefly adverts to the different theories which have been advanced to account for the heat of these springs, and of those which exist in other parts of the globe. He observes, that the ancient philosophers had attempted to explain the origin of thermal springs; that Seneca and Aristotle ascribed them to the existence of subterranean fire; Zeno, Cleanthes, and Thermophilus, to absorption of the sun's rays; Democritus, to limestone rocks, through which the water finding its channel becomes surcharged with heat; others, again, have supposed the decomposition of pyrites to occur, and to heat the water. To one curious fact he alludes, to which Dr. Gibbes had drawn attention, which proves the depth from which the water springs, namely, that the air which bubbles up to the surface with the water has lost its oxygen, and cannot support combustion, and that the iron cannot be held in solution, for it immediately is deposited in its metallic state. He gives the analysis of the waters, and points out how minute is the quantity of salt contained in a large proportion of water; he discusses the dose to be taken in the various morbid states for which the Bath waters are to be drank, the precautions necessary to be observed, for they are by no means to be had recourse to indiscriminately, their effects being very striking; apoplexy has followed upon their injudicious use: he then speaks of the diseases in which they may be employed, and thus graphically paints the symptoms of hypochondriasis:

"Mens summa debilitate confecta, fictis perturbatur malis, timet, dubitat, ita sese crucians, ut non multum absit ab insania; metus malorum ægrum fatigat et torquet; tran-

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quillitas, requies, dulce curarum levamen, vanescunt; nil amicorum societas, nil vitæ dulcia gaudia, nil spes ipsa valet: mœstitiam ex animo expellere nequit æger: ante oculus dira mortis imago incedit solicitatque; nescit quo locorum abire: confectus metu vano, melancholiæ demum succumbit; donec quæ timuit, adsunt; quæ metuit, superveniunt; et mala, quæ quondam imaginatio sola creavit, circumdant."

He dwells on the value of the Bath waters in gout, where its development is necessary, in diseased liver, in paralysis, in colic following upon the employment of lead. Whilst speaking of their power in diseases of the skin, he classically narrates the fabulous discovery of the springs.

Having distinguished himself in the debates of the Royal Physical Society, and having preferred delivering an essay in the Latin language to the usual routine of writing in English, he was elected President, during the session following his graduation. The subsequent year he devoted to travelling on the Continent, and to a residence at the Foreign Medical Schools. He visited Leyden, Göttingen, Bonn, Erlangen, Paris, and most of the Universities that had acquired reputation, and formed friendships amongst the Professors, which have made him well known to the foreign *savans*.

Dr. Sigmond had scarcely attained the twenty-second year of his age, when he was invited to become Physician in the family of Sir Francis Burdett, where he continued nearly eight years, principally residing at Bath, devoting his time to the gathering information and collecting materials for farther improvement. He then determined to spend some time on the Continent, and having been especially introduced by Mr. Canning, he proceeded to the North of Europe; he was recalled, however, whilst in Sweden, in consequence of the indisposition and death of a beloved parent, who was suddenly snatched from amongst a large circle of devoted friends. During his residence at Stockholm, he distinguished himself in the Medical Society, to whom he presented a dissertation in the Latin language, which embraced the extracts from the "Christianismi Restitutio" of Servetus, containing the extraordinary views of that singular and unfortunate man. The title of the dissertation was *Dissertatio, quædam de Serveto complectens.* This was published at London, in 1826, under the title of *The Unnoticed Theories of Servetus; a Dissertation addressed to the Medical Society of Stockholm.*

In the first part of the first volume of the *Bibliotheca Sussexiana*, published in 1827, I have given an account of an exceedingly rare MS. copy of a work attributed to Servetus, entitled *Christianismi Restitutio.* I purchased this MS. for His Royal Highness the Duke of Sussex from the celebrated Meerman Collection; and on a fly leaf, in the hand-writing of M. Meerman, the following is inscribed: *Hæc est Copia Manuscripta Libri longe rarissimi, cujus Auctor famosus ille* MICHAEL SERVETUS, *quique im-*

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pressus fuit Viennæ Allobrogum, 1553, *in* 8vo. *et femori Auctoris alligatus cum ipso combustus est. Ejus autem tanta est raritas, ut qui gloriari possit, se illum typis excusum vidisse, nemo reperiatur. Nam quod Cassellis in Bibliotheca Principis Hessiæ olim exstitit exemplar (ex quo pauca manu descripta promanarunt) deperditum est. Vid. Jo. Vogt in Catal. Libr. Rarior. p.* 624. *(edit.* 1747.) *Hocce vero Exemplar perquam diligenter et accurate ex impresso transcriptum est, et quidem ita, ut singulæ paginæ hic responderant paginis Voluminis impressi.* In the second part of the same work I have described the edition of Pagninus's version of the Latin Bible, which was carefully revised by Servetus; and I have given a short sketch of his life, to show the spirit of the times in which he lived, and the sufferings he experienced for maintaining opinions then considered as heretical. The Christianismi Restitutio was published in 1553 at Vienna, but without the name of the author. With the theological opinions contained in this volume I have nothing to do in this place; but I must allude to its containing certain passages, in which are to be found the earliest notices of the doctrine of the Circulation of the Blood, to the complete discovery and development of which, seventy years afterwards, our Harvey owes his everlasting fame. The copy of the Christianismi Restitutio in Dr. Sigmond's possession, was bequeathed to him by Dr. James Sims, under the impression that it was the only copy of the original work saved from the fire at which the author was immolated, the copy secreted and saved by D. Colladon, one of the judges of the horrid tribunal by which Servetus was sentenced to the flames; but it is not the original work, it is an impression made in 1790 from the original, which is now in the Royal Library of Paris. This is the work from which the Duke of Sussex's MS., above alluded to, was made, it having passed to the Royal Library of Paris, at the sale of the books of the Duc de la Vallière for 3810 livres. The Duke had purchased it for nearly 400 guineas. Dr. Mead had endeavoured to give a quarto edition of it previously, having obtained it from the Library of the Landgrave of Hesse Cassel; but before it was completed it was seized by John Kent, messenger of the press, and William Squire, messenger in ordinary, on the 27th of May, 1723, at the instance of Dr. Gibson, Bishop of London, and burnt, a very few copies excepted. I have seen and examined one of these copies; it possesses neither title-page nor table of contents; and *three* books only are printed, occupying *252* pages. The copy I allude to, is in the Library of tbe Medical Society of London, and contains the whole of the matter concerning the Circulation of the Blood. Only four copies, I believe, of the reprint of 1790, are known to exist.

To the physiological passages contained in this work, Dr. Sigmond wished

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to draw the attention of the Stockholm Medical Society, and the learned world. He quotes the whole of the theories, verbatim. He shows that Servetus fixed upon the ventricles of the brain and the choroid plexus as "the seat of that ray divine which an immortal Creator has shed upon man, and upon man alone." He describes the passage of the blood from the right ventricle of the heart through the lungs to the left ventricle of the heart, and gives his reasons for his belief in his doctrine of the circulation; and observes, that Galen was not acquainted with the important truth. The blood, he supposes, having received, in its passage through the lungs, the breath of life, is sent by the left ventricle into the arteries; the purest part, he says, ascends to the base of the brain, where it is more refined, especially in the retiform plexus. It is still more perfected in the small vessels, the capillary arteries, and the choroid plexus, which penetrate every part of the brain, enter into the ventricles, and closely surround the origin of the nerves. From the vital spirit it is now changed into the animal spirit, and acts upon the mass of brain which is incapable of reasoning without this stimulus. In the two ventricles of the brain, he contends, is placed the power of receiving impressions from external objects; in the third, is that of reasoning upon them; in the fourth, is that of remembering them. From the communication through the foramina of the ethmoid bone, the two ventricles receive a portion of external air to refresh the spirit, and to give new animation to the soul. If these ventricles are oppressed by the introduction of noxious vapour, epilepsy is produced; if a fluid presses on the choroid plexus apoplexy; and whatever affects this part of the brain causes loss of mental power.

These constitute the most important of the observations of Servetus; but Dr. Sigmond has also transcribed his notions on vegetable and animal life, which are rather entitled to attention by their curiosity, than their correctness. They are to be found in the second dialogue on the Trinity, a dialogue proving Servetus not to have entertained the Unitarian principles of which he was accused. The theological opinions of Servetus are so blended with his physiological ones, that they frequently become unintelligible; yet the originality of the author is a most redeeming quality to oppose to the difficulty of their perusal. Dr. Sigmond's *Dissertatio* will be admired for its latinity, and the perspicuity with which he has treated a difficult subject. The introductory passages, relating to the Progress of Science in Sweden, are remarkable for their elegance; but they are too long for insertion in this memoir. The *Dissertatio* was published separately, in 1826, and with the *Thesis* on the Bath Waters, in 1828. The latter edition was dedicated to his friend, the late Dr. George Pearson, to whom he pays some distinguished compliments.

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During his residence at Stockholm, Dr. S. formed a friendship with Berzelius, with Ekstrom, with Retzius, and the most distinguished men of the day. He examined, with great care and attention, the arrangements of all the public institutions, and made such suggestions as he thought necessary. On his departure, he received, through Lord Bloomfield, the British Ambassador at the Court of Stockholm, a communication from the King of Sweden, expressive of his great regret at his departure, and his satisfaction at the attention he had given to the public institutions. On his return to Bath, he found that the loss he had unexpectedly sustained, in the death of his mother, rendered him incapable of following any pursuits in that city, and he determined to seek the metropolis, as the great seat of action, and to dissipate his mental grief by the exertion of his abilities, and the application of those powers which he had cultivated, rather as an ornament than with the intention of practical employment. In the year 1826, he became a Licentiate of the Royal College of Physicians, of London, and commenced his residence there; in the following year, he was chosen Physician to the Marylebone General Dispensary, to which he was attached for some years, until the Charing Cross Hospital promised to afford him a field for those practical inquiries to which he devoted the energies of his mind. On retiring from the former institution, he received the warmest thanks of the Governors, for his constant and unremitting attention to his duties, and for the successful employment of his skill.

Educated at St. George's Hospital, and enjoying the regard and friendship of the medical officers who had been his fellow-students, and having likewise, as a governor, taken an active part in the management of that institution, Dr. Sigmond had every reason to expect that he would, in due time, have become one of its physicians. His numerous friends had, indeed, promised him the most valuable support, when a vacancy offered itself. Unfortunately, however, for him, he determined to unite himself with some medical men, who had already opened a Dispensary, and who purposed to direct the attention of the public to the erection of an Hospital, in the neighbourhood of Charing Cross—a spot which much demanded the consideration of the benevolent, for there no medical relief could be afforded to a dense population, or surgical assistance when an accident occurred; and this in one of the most frequented thoroughfares of London. Dr. Sigmond most materially assisted in the collection of funds, and aided by his purse, and by his services, in carrying into execution this project. He fondly hoped, that this institution might become a blessing to the poor. He devoted his time, his attention, and his skill, to further the objects for which it was declared to have been established. As a physician to an hospital, he

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fulfilled his duties with unremitting assiduity; he had been the favourite pupil of Dr. Hamilton, of Edinburgh, and had followed that sagacious man for several years through the wards of the infirmary; he had been intrusted by Dr. Pearson, at St. George's, with the important duty of drawing up his Clinical Diary, and was admirably calculated to give to the profession, and to the public, the result of his own experience in disease. The lectures that he occasionally delivered on the cases committed to his care were remarkable for their clearness, for their history of disease, and for their appropriate treatment. In the "Medical and Surgical Journal" appears one of these lectures upon Abscess of the Liver, (in which the writer of this article was called upon to operate,) which evinces the judgment and knowledge of its author. The punctuality of attendance, the watchfulness of his patients, deserved the utmost meed of praise, and the hospital was under a great obligation to him for abandoning both the Marylebone General Dispensary, and the School in Windmill Street, for the purpose of fostering a rising institution. His class had been numerous at the latter school; he, however, cheerfully gave up the advantages he had already secured, and delivered, at the hospital, a series of lectures, which has since obtained for him a high celebrity, to a class which seldom exceeded six persons, and these, for the most part, gratuitous pupils.

The sacrifices that he made were repaid to him in the most unjustifiable manner. He was, by one of the coarsest and most insidious intrigues ever concocted, driven from the situation he held, by three or four individuals, whose names will only be remembered from their conduct towards a man, who has exerted himself for his profession, so as to have obtained its regard and its respect. It would not be possible, within the limits of this short sketch, to give even an outline of the history of the example set by a petty hospital, just established, scarcely known but by its supplications to the benevolent, of getting rid of two of its most zealous supporters, and its medical officers, as soon as they insisted upon the just performance of the promises held forth by its founders. Soon after the dispensary became an hospital, Dr. Sigmond found fault with its management, he complained of the drunkenness of the servants employed; even the nurses were shown to be incapable of fulfilling their duties to the sick; he proved, that the drugs were not such as should be administered; he pointed out the impossibility of carrying on the necessary education of the pupils, and he was most anxious to unite the hospital with the King's College, as the only means of rescuing the hospital from its bad domination, and of carrying into effect the wishes of those who had given their money. His determined opposition to the views of Dr. Golding, a man who, having neither the standing in his profession, nor

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the ability for the post, had assumed the extraordinary office of director, (a situation which gave power to one man without being subject to any proper control,) led to one of the most disgraceful combinations that ever existed. Dr. Sigmond's firm support of the writer of this article, when a most unwarrantable attack was made upon his integrity and character, induced the director and his agents to exert themselves to deprive the hospital of a benefactor, and the profession of an hospital physician, who would have given to them sound and solid information, based upon practical experience. The charges that were brought against him were, that he had attempted to carry into effect that union of the Charing Cross Hospital and of the King's College, which must yet take place, in spite of the selfish and paltry views of the present managing officers. This the public still demands, but it is most unwarrantably denied. The Charing Cross Hospital cannot be anything but a tenth-rate hospital under its present management, and will still continue a laughing-stock and a bye-word in the profession. The next charge, that he had abandoned the school without returning the fees of his pupils, was one of the most malevolent and base accusations that any set of men ever ventured to produce. The whole amount of fees for which Dr. Sigmond had already lectured six months, was thirteen pounds; and so far from ever having contemplated declining to deliver his lectures, he resumed his station at Windmill Street, and not only received the pupils who had paid him, but those who had gratuitously been admitted at the Charing Cross Hospital. So different was his situation in the session succeeding his empty professorship, that, instead of six pupils, no less than sixty entered his class. No one can have had greater reason to rejoice at the breaking up of a connexion than has Dr. Sigmond; and no one can feel greater contempt for the means by which it was brought about than he does.

Had the insult offered to Dr. Sigmond come from any other body of men the profession would, doubtless, have resented it more strongly than they did; but they considered that those who were thus guilty of conduct, which disgraced the whole body, did not carry with them any weight with the public, nor enjoy any share of the general confidence. No individual less deserved any imputation to be thrown upon him by a member of the medical community, for all his labours have been undertaken for science and for its followers. No one has ever more strenuously upheld the respectability of the character of those who have practised the medical art. A parliamentary inquiry into the management of our hospitals has long been proposed by a member of the medical profession, who is both a journalist and a legislator; if he would earnestly promote it, he would confer a lasting obligation upon the poor, and upon the profession. He might bring to light a curious history

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of the foundation of the Charing Cross Hospital, and the manner in which it has been conducted.

The particulars of the transactions to which I have alluded, have been stated in pamphlets, addressed to the Governors, and to Dr. Golding;* and also most unreservedly laid before a large meeting of the profession, convened together by public advertisement, and the result, after nearly four hours' discussion was, the unanimous passing of the following resolutions:—

1. "That it is essentially necessary, for the welfare of an hospital, and the character of its medical officers, that it should be conducted by a weekly Board of Governors; and this meeting is of opinion, that the office of Director, as established at the Charing Cross Hospital, is an appointment completely at variance with the constitution of similar institutions, and it has been proved to have been highly detrimental to its interest."

2. "That this meeting is also of opinion, that no Committee either is or ought to be invested with the power of suspending any medical officer of a public institution, without the knowledge and sanction of the Governors at large; and that the dismissal of Dr. Sigmond and Mr. Pettigrew is an act of usurpation, and that, both in a professional and public sense, the act was totally unjustifiable."

3. "That the best thanks of the public and the profession are due to Dr. Sigmond and Mr. Pettigrew, for their attempts to correct the mismanagement of the Charing Cross Hospital, which, under the present system, is totally unworthy of public patronage."

The Council of the Royal College of Surgeons also very properly took away from the hospital their recognition of it as a School of Surgery. In another memoir an opportunity will be afforded me to enter more into particulars; it will be sufficient, on the present occasion, to say, that as the hospital has not a charter, neither Dr. Sigmond nor myself possessed any remedy by law. The Committee sheltered themselves under this circumstance. At a special general meeting, purposely convened at an unseasonable period, (Jan. 5, 1837,) and composed chiefly of honorary governors, it was determined that no investigation into the transactions should take place,—that a report of the proceedings of a special committee, and the extraordinary decision to which they came, should neither be received nor considered; and, in short, that a proceeding of the greatest audacity and severity should pass without being submitted to the general body of sub-

* Address to the Governors and Subscribers of the Charing Cross Hospital, on some extraordinary proceedings that have lately taken place at that institution, and on the management of the hospital in general. By T. J. Pettigrew, F.R.S., &c., Senior Surgeon to the Hospital. London, 1836, 8vo.

Letter to Benjamin Golding, M.D., Director of the Charing Cross Hospital, by G. G. Sigmond, M.D., F.S.A., &c., Physician to the Hospital, London, 1836, 8vo.

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scribers. *This unprecedented assumption of power and measure of injustice was carried by the Members of the Special Committee itself!* They absolutely voted against the reception of their own report! They were too sensible of its injustice, to allow of its being subjected to any examination! They endeavoured to shelter themselves under the protection of a legal technicality. They had no fear of legal retribution, and appeared to be insensible to the operation of any moral influence. The Lord Chief Justice Tindal declared, that the meeting, whence all the proceedings sprung, had not been held in conformity to a law—a fundamental law of the hospital—and also said, that, had the hospital been a CHARTERED INSTITUTION, the proceedings of that meeting would be *invalid.* But it appeared, that *the Hospital having no Charter, the laws were not binding.* It was merely a voluntary association, and the operation of its laws must be dependant upon the honour and feeling of the individuals connected with such an association. Men of honourable minds would feel more strongly bound to attend to obligations voluntarily imposed upon themselves, by paying respect to those laws, and by a most rigid adherence to them, particularly where the interests and characters of individuals are to be subject to their operation. This, however, was not the feeling of the meeting in question. To complete the measure of iniquity at this special general meeting, Dr. Sigmond was strictly prohibited from saying one word, because a law had been made to prevent any medical officer from becoming a governor; and therefore Dr. Sigmond, who had subscribed more money to the hospital than most of those who were present, was not permitted to address the meeting!

> "Qui statuit aliquid, parte inauditâ alterâ:
> Aequum licet statuerit, haud æquus fuit."*
>
> SEN. TRAGŒD. MED. ACT 2.

This conduct is utterly despicable. Truly, indeed, does Fellthem say, "It is a dastardly meanness to strike a man in the dark, and, like a serpent, bite him by the heel, and then glide into a hole, for want of courage to justify our conduct."

In the pamphlets to which I have alluded, it was shown that the hospital had been upwards of eight years without a president—without acting treasurers—with a merely nominal committee, the duties of which were chiefly performed by honorary governors, of which there are not less than

* "Who judgment gives, and will but one side hear,
Though he judge right, is no good justicer."

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sixty, all, or nearly all of whom (with the exception of those executors of bequests who are of course legally qualified), had been made at the suggestion, or upon the nomination, of the director and honorary secretary—that the whole institution appeared to be subject to the controul of one or two individuals—no contracts made—no annual accounts published—no laws printed, and honorary governors made by other honorary governors. Various charges were made as to the conduct of the director towards the patients—his neglect in the supply of proper instruments, bandages, &c. and of good and efficient drugs; but none of those points were duly enquired into. Some of the matters complained of have been of too glaring a nature to be entirely overlooked, and some, though I fear but a few, have been remedied. A President has, at length, been appointed, and a Board established. It is to be hoped, for the sake of the poor inmates and suffering humanity, that the Governors will bestir themselves, and look fully into the management of the institution. It is not sufficient that they subscribe their money; it is necessary to give a portion of their time, to see that it is properly expended. There are no institutions capable of doing so much real good as hospitals; and the advancement of medical science must be greatly dependent upon the manner in which they are conducted. This circumstance must be my apology for the length of the preceding statement.

As a practitioner, Dr. Sigmond is to be highly esteemed. The number of years that it has been my happiness to be associated with him, qualifies me to speak upon this point. The acuteness he displayed in detecting the precise nature of diseases, and his prognosis respecting them, were only equalled by the elegance and simplicity of his prescriptions; which unlike the recipes of former times, and of many of the present day, embraced a few, but effective articles, and these so combined, as to produce a precise result. But the branches of medical science to which Dr. Sigmond has devoted his more immediate attention, and from whose cultivation he has acquired his station in the profession, has been Materia Medica and Therapeutics. It is extraordinary, that the most important information which these inquiries embrace, has not induced more complete and thorough investigation by medical men. It had long been considered sufficient for the practitioner to watch the morbid conditions of the body, and to employ remedial agents, with whose nature, and whose power, he was superficially acquainted. The medical authorities, whose works were quoted, had been contented with giving to the student a mere catalogue of drugs, with some unsatisfactory history of the means by which they were obtained, a meagre detail of the general appearance, a brief history of the attempts that had been made by chemists to analyze it, and some uncertain and ever-varying statement of the

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dose in which it might be employed in diseases, without any allusion to the stage in which it was to be administered, or to the circumstances which contraindicated its use. In order to remedy the deficiencies of knowledge of the natural history and physical appearances of drugs, Dr. Sigmond assisted in the formation of the Medico-Botanical Society, and became one of its Professors. Unfortunately, for the progress of these views, this institution, for a considerable length of time, was under the direction of an individual, who mistook notoriety for reputation, and who injured the cause of science by seeking the patronage of Courts rather than the assistance of the learned. Dr. Sigmond, therefore, withdrew till better prospects opened; and when the Earl Stanhope determined to devote the energies of his enlightened mind to the reformation of the follies into which the society had been betrayed by an individual, and to foster, with his high intellectual powers the cause of science, Dr. Sigmond became the honorary secretary, and assisted by his industry, and by his unwearied attention, in placing the institution on a proper footing, and in recovering its character among scientific bodies. The first step was to obtain at the meeting of the society collections of the most important drugs employed in medicine. He obtained from the first druggists specimens of all the articles of the Materia Medica, and he likewise contrasted them with the ordinary articles found in the careless druggists' shops. He pointed out the deteriorations that were experienced by keeping, the adulterations that were shamefully practised, the injuries that were sustained by voyages, and by the ignorance of those who imported from distant countries the different products, which, when brought into the English market, were too often used.

His next step was to open communication with the herbalists of this country, and with the scientific men in various parts of the world, by whose assistance he might be enabled to trace the source of those vegetable remedies we employ; for scarcely do we know from what particular tree we obtain some of our most valuable therapeutic agents; even the cinchona bark, which, for nearly three centuries, has been employed by us, proves our ignorance of the most important points connected with its growth: we know not the circumstances which produce three different varieties of bark; and the belief that they are obtained from three species, distinguished by the shape of their leaves, is now acknowledged to be erroneous. Dr. Sigmond has devoted his attention to the growth of vegetables in this country which are natives of other lands, and has tried various experiments which prove that opium, castor oil, and rhubarb, might be procured on our own soil equal to that which is produced elsewhere. He has likewise shown that many of our indigenous plants might be substituted for more expensive drugs; that the elm bark

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may supply, in many instances, sarsaparilla; and that simple vegetable substances may often be more advantageously employed than the mineral products, which are apparently more active, but often leave behind mischief, which insidiously undermines the constitution. His enquiries into the characteristics of plants did not alone engross his attention; he ascertained the doses in which medicines are to be employed; he showed the fallacy of some of the opinions of the physicians of the day, who were in the habit of administering large doses; and proved that, in a vast number of instances, a portion of that which was so ostentatiously given, as a proof of the powers of the digestive organs, passed through the alimentary canal completely unchanged. He showed that, in the practical exercise of the medical science, the various theories of the *modus operandi* of different medicines were founded upon chemical views, which supposed that the human system was little else than a laboratory. One of his most anxious wishes was, to impress upon the minds of his hearers that the same medicine, administered in various stages of the same disease, might prove either salutary, inefficient, or dangerous: thus Opium, so highly useful in rheumatism, becomes a source of mischief, if it be given after blood-letting has once been had recourse to; that, for instance, Pulvis Ipecacuan. Comp. administered to produce perspiration, will render rheumatism more difficult of cure, if it has been preceded by venesection. Hemlock, which assuages the pain in the last stage of cancer, or checks its progress in the very early stage, will, in the state of ulceration, prove injurious, by diminishing the nervous power, and hastening absorption; whilst carbonate of iron is at that time most valuable, though it has little or no influence when hemlock is most required.

It would extend this memoir far beyond its assigned limits, if I were to notice many other important views entertained by Dr. Sigmond, and illustrated in his course of lectures on the Materia Medica. These lectures he has delivered for several years, and they have lately been transferred to the pages of the "Lancet," to which work the reader is directed for particular information on this subject. If, where all is so good, and so highly deserving the attention of the medical student and the enlightened practitioner, I might venture to point out any articles as deserving of especial attention, I would confidently name the lectures in which Cinchona, Digitalis, Conium, Stramonium, the Ergot of Rye, and Hydrocyanic Acid, are treated of. They contain information of the most important character, and richly deserve attention from every member of the medical profession. These lectures have been translated into foreign languages, and printed in the journals. Many of them have been re-printed in India, and some have been commented upon. They have also appeared in the North American "Quarterly Journal

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of Medical Science." This must be flattering to Dr. Sigmond, and serve, in a little measure, to repay him for the anxiety and labour he has had in their composition.

In the year 1834 Dr. Sigmond read a paper, on the subject of *Endermic Medication*, before the Medico-Botanical Society. This is a subject which has not hitherto, in this country, obtained that share of inquiry to which it is entitled. Dr. Sigmond tells us, that our continental brethren have considered cutaneous absorption or imbibition, under two heads—that which consists in the simple rubbing in through the skin of medicinal substances, to which the term *Iatraleptic* medicine is applied; and that to which they have given the name of *Endermic*, which consists in the removal of the epidermis, by such means as will not produce any structural change in the subjacent tissue, and then admit of the introduction of the remedial agent through the denuded surface; these two systems of cutaneous medication have been carried to a great extent on the continent. Magendie endeavoured to show by experiment, that as long as the epidermis is in a sound and healthy state, cutaneous absorption does not take place, unless friction be employed. He placed, by means of a glass tube, a few drops of prussic acid on the integuments of a rabbit, and the poison did not produce any appreciable effect. This, Dr. Sigmond says, is at variance with the experiments of others.

"M. Emmett tells us, that he found the essential oil of bitter almonds, applied to the uninjured skin of a rabbit, produce the usual symptoms, and death; and, he adds, that the peculiar odour of the poison was very perceptible in the deep-seated muscles of the back. The absorption of lead, in whatever form it comes into contact with the skin, will produce colic, or the paralysing effects which it causes when taken internally, without any apparent action upon, or destruction of, the epidermis. Arsenic, when applied to the skin of the human subject, may produce all the ordinary symptoms which attend its internal administration, and, indeed, it will act with equal violence and rapidity; the stomach will exhibit the same signs of inflammation. Mercury will also cause its peculiar effects when applied to the skin. Corrosive sublimate has been known to excite, through the sound skin, an action as violent as through the alimentary canal; salivation, and even death, have been known to follow its application."

It is not necessary to allude to the transmission of vapours through the skin, as Magendie, Nysten, Buchner, and others have fully established the fact. According to Dr. Sigmond, few medicines have been more fairly tried as an *iatraleptic*, in France, than *digitalis* in the cure of dropsy; and it has answered the most sanguine expectations that had been formed of its success. In the only two cases, however, in which Dr. S. had an opportunity of seeing it employed, it did not afford any permanent benefit; but

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they were cases in which a favourable result could not be expected. The *atropa belladonna* has been tried in cases of neuralgia by Dr. Gouvion and M. Carre; and in rheumatism it has been found eminently successful, when its extract has been rubbed upon the abdomen, upon the sternum, or the dorsal vertebræ. Madame la Chappelle has used it successfully in cases of labour, attended by spasmodic contractions of the neck of the uterus; and it has been reported to have been of service in the reduction of herniæ, and in retention of urine occasioned by muscular spasms about the neck of the bladder. Obstinate constipation has yielded to the application of *castor oil* rubbed over the abdomen; and where such violent and constant sickness has prevailed so as to preclude the possibility of the internal administration of the oil, it has produced all its good effects, without adding to the distressing state in which the stomach is found. Dr. Sigmond reports that he has seen by these means an action produced upon the bowels within a quarter of an hour after the friction had been employed, immediately on the patient leaving a bath of the temperature of 90°, when calomel, jalap, neutral salts, and lavements, had failed to relieve the intestinal canal, and where constant vomiting had commenced, and all idea of internal remedies had necessarily been abandoned. *Castor oil, camphor, veratria,* the *chlorides of gold* and of *sodium,* and *iodine,* have all been employed in the same manner.

The second method, the *Endermic,* consists in the application of remedies after the removal of the epidermis by those means which will not occasion any injury to the texture of the tissues beneath; which, however, is a matter of no little difficulty. Some medical agents employed in this way, Dr. Sigmond tells us, have exhibited their effects in a very brief space of time; and the rapidity with which they are absorbed is such as to demand the greatest attention, more particularly as very minute doses will operate very readily, so much so, that very serious results have followed the application of arsenic and other remedies to denuded surfaces. *Quinine,* as an endermic remedy has been highly spoken of for its success in the cure of intermittent fever. M. Martin and M. Lambert have tried it, and succeeded. When a very small quantity of the sulphate of quinine is applied to the lower limb, in about ten minutes a sensation of gentle heat is said to be perceived in the limb, which ascends to the back, and diffuses itself over the whole system. The hot fit comes on before its usual period, and the whole of the paroxysm is shortened. The introduction of ten grains has been found sufficient to arrest the progress of an ague. Care must be taken to reduce it to a fine powder, and to incorporate it with simple cerate, or some greasy matter, for without this a high degree of irritation will be produced.

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Various narcotics have been employed in this way. The *acetate of morphium* was used at the Hospital Cochin and the Bicêtre, in chronic catarrhal affections, with marked advantage. It has also been used in gastralgic affections, in rheumatism, lumbago, sciatica, hemicrania, &c. *Strychnine* has also been employed; but the great danger attendant upon its application renders it a truly fearful agent.

The subject is one deserving of further investigation. I have introduced it here with the view of promoting that object, and I agree entirely with Dr. Sigmond in the following observations:—

"It is incumbent on the medical man to scrutinize with anxious care every new plan that may be proposed for the alleviation of disease or for the prolongation of life; although many may be offered, which, upon strict examination and cautious experiments, are found little adapted for the great objects he has in view, he must always bear in mind that from unsuccessful researches he attains the great end of knowledge—truth; and that although he may be baffled in the object of his inquiry, yet that every fresh step he takes advances the progress of science. In inquiry into a new mode by which medicine may be introduced into the system, we must be well aware that at the first onset many discrepancies may be visible, many mistakes may be made, and many difficulties will present themselves, which can only be surmounted by reasoning founded upon experiments. We are not to expect that the new system will be found superior to the others that have already gained general estimation from their excellence, nor do we vainly expect that every malady will yield to a new treatment; all that we wish is to ascertain whether it may not be possible to add some fresh light to the science of medicine, and to afford some new aid for the advancement of the healing art; for the time is now gone by, when every new object is hailed as a great and important discovery, lauded by many, abused by others, until the public mind is led to distrust even the judgment of philosophers, and to deny the knowledge of the wise, when they find their opinions differing so much, and yet so fiercely supported."

The variety of subjects noticed in the preceding pages will show that Dr. Sigmond has possessed great advantages in obtaining information by the acquisition of different languages, the surest means of arriving at knowledge, and of tasting the choicest and purest of all the pleasures we enjoy in this life. He may be looked upon as one of those described by Sterne as having derived "a peculiar satisfaction in conversing with the ancient and modern dead, who yet live and speak excellently in their works;" and he has employed this knowledge in the cultivation of those branches of science which have for their end the good of mankind and the preservation of human life. He presents to our view a finished scholar and an accomplished gentleman; one with whom—and I speak it from personal experience—friendship may be maintained, and whose conduct is ever guided by the strictest principles of honour and integrity. It is not my practice to

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indulge in observations upon personal character in this work farther than professional conduct may be regarded as dependant upon it; but it would be a violence to my own feelings were I not to embrace this public opportunity of recording the obligations I feel myself to lie under to him for his generous and high-minded support of me during the disgraceful proceedings at the Charing Cross Hospital. "Friendship is the balm and cordial of life; and, without it, 'tis a heavy load not worth sustaining." And to Dr. Sigmond, I would say, in the language of Pope addressed to Swift, "Of all the world, you are the man (without flattery) who serve your friends with the least ostentation; it is almost ingratitude to thank you, considering your temper; and this is the period of all my letter which I fear you will think the most impertinent."

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BENJAMIN TRAVERS, F.R.S.

SENIOR SURGEON TO ST. THOMAS'S HOSPITAL, AND SURGEON EXTRAORDINARY TO THE QUEEN.

"Sapere et fari, ut possit, quæ sentiat."—HORAT.

THE father of Mr. Travers was an eminent merchant of London, and one of its most liberal, enterprising, and active citizens. To strong natural talents, he added remarkable energy and benevolence of character, as was evinced on many occasions of his public and private life. Of the London Institution, the Society for the Extermination of the Small Pox, and the Infirmary for Diseases of the Eye, he was among the earliest and most zealous promoters.

The subject of this memoir, the second of ten children, was born in 1783. His mother was the daughter of the Rev. Francis Spilsbury. After receiving a classical education, at the Grammar School of the Rev. E. Cogan, at Cheshunt, in Hertfordshire, he became a private pupil of Mr. Frend, formerly of Cambridge; and at the age of sixteen was placed in his father's counting-house, to be prepared for mercantile life; but evincing a strong distaste to commercial pursuits, an accident determined the choice of his profession. His father was at this time a frequent attendant on the Lectures of Mr. Cline and Mr. Astley Cooper, on Anatomy; and being sometimes accompanied by his son, the latter was sufficiently interested in the subject to express a predilection for the surgical profession. Mr. Cooper's election to Guy's Hospital afforded an advantageous opportunity; and in August, 1800, Mr. T. was entered to Mr. Cooper as his articled student for the term of six years. During his apprenticeship to Guy's Hospital, he not only enjoyed the advantage of witnessing the admirable talents of his master, whose fame was rapidly extending as an Hospital Surgeon and Teacher; but, being an inmate of Mr. Cooper's family, the valuable privilege of conversational instruction, and the benefit of an example of extraordinary zeal and assiduity.

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A private Dissecting-Room, at Guy's Hospital, furnished the Dressers of that establishment with a more quiet and wholesome apartment than the crowded and ill-ventilated room, at St. Thomas's; and here, during the last year of his apprenticeship, Mr. Travers gave occasional demonstrations in Anatomy, to his fellow pupils. Under Mr. Cooper's auspices, he also established a Clinical Society among the pupils, meeting weekly through the season, to which he acted as Secretary. At these meetings cases of interest occurring in the two hospitals were read and freely discussed. It was supported with much spirit for many years.

Having been admitted a Member of the College of Surgeons, Mr. Travers passed the session of 1806-7 in Edinburgh. Here he made the friendship of Dr. Hamilton Sen., Dr. Barclay, Dr. John Thomson, and other Professors attached to the medical school, while attending their Lectures on Medicine, Chemistry, Physiology, Military Surgery, and the Clinical Lectures and wards of the Infirmary. He had also the gratification of becoming personally acquainted with Mr. Dugald Stewart, Professors Playfair and Leslie, Lord W. Seymour, Sir James Hall, Miss Elizabeth Hamilton, &c. While at Edinburgh Mr. Travers repeated, upon a large scale, the experiments of Bichât upon the effects of un-arterialized blood on the heart and nervous system, and those of other Physiologists upon the relative temperature of venous and arterial blood, and the effects of the different gases upon respiration. The general results he obtained were confirmatory of the accuracy of Bichât as an experimentalist.

After a pedestrian tour to the Scotch and English lakes, in the former of which he was accompanied by his fellow-student, afterwards brother-in-law, Dr. Gooch, he settled in London, and married the daughter of William Morgan, Esq., of the Equitable Assurance, and grand niece of the celebrated Dr. Richard Price, a lady to whom he had been long engaged.

He was now appointed demonstrator of anatomy, at Guy's Hospital; which office he performed for many years to a large class of students. The examination of morbid bodies, then almost without restriction at Guy's Hospital, was also conducted by him, or under his superintendance.

In 1809, the situation of Surgeon to the East India Company's Warehouses and Brigade, became vacant. Two appointments were declared, and Mr. Travers announced himself one of eleven candidates, among whom were Mr. Ramsden, of St. Bartholomew's, and Mr. Lucas, of Guy's Hospital; about a week previous to the election. By an unexpected and extraordinary combination of interest, he was so fortunate as to obtain one of these situations by a single vote, and was thus provided with an active occupation, and a sufficient income. The very high terms of approbation in which, with

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the perfect and generous concurrence of his colleague, Mr. Lucas, Mr. Cooper had couched his testimonial, doubtless contributed much to this result.

In 1810 Mr. Saunders, demonstrator of anatomy at St. Thomas's, died of apoplexy, in the prime of life. He had founded, in 1804, with the aid of his friend and fellow-student, Dr. Farre, the London Infirmary for Diseases of the Eye; and under their joint management the institution, though still in its infancy, was one of great and valuable service to the community. Mr. Saunders had distinguished himself, by a successful devotion of his knowledge and talents to the little-understood pathology of this interesting organ; and with, other valuable additions to Ophthalmic surgery, had introduced and perfected the operation for the Congenital Cataract of Infants; afterwards made known to the profession in his posthumous work, edited by Dr. Farre. The vacancy then occasioned was first proposed to Mr. Henry Cline. Mr. Travers, who was next applied to, accepted the office, expressly stating, in a public address to the Governors, that he embraced the opportunity offered him of studying the diseases of the eye as a *general surgeon not as an oculist*, with the view of restoring to the profession a legitimate department of surgery, which, notwithstanding the examples of Cheselden, Pott, Scarpa, Hey, and others, had been suffered to lie in a state of disgraceful neglect; and formed, in consequence, the hereditary and exclusive practice of one or two individuals, where it was not pre-occupied by advertising quacks. Mr. Travers was unanimously elected, and entered with alacrity upon his duties. In the commencement of the following year the practice of the infirmary was opened by public announcement to medical students; and Mr. Travers, with the able co-operation of Dr. Farre, had the satisfaction of exhibiting the first scientific views, at least in this country, of the various diseases incident to the organ of vision, upon a scale commensurate with their importance, to a class which included several of the most distinguished members of the profession, both in medicine and surgery, at the present day. For four years Mr. Travers held the office of surgeon singly; in 1814, from the increased number of patients and pupils, the duty became so onerous, that he applied to the governors for assistance, and was in consequence joined by Mr. Lawrence of St. Bartholomew's Hospital.

Upon occasion of the death of Mr. Birch, in March, 1815, Mr. Travers was elected, without opposition, one of the surgeons to St. Thomas's Hospital. The following year he resigned the surgeoncy which he had held for seven years under the Honourable East India Company, and a year afterwards that of the Eye Infirmary.

In 1816 he took possession of the residence of Mr. Cooper, upon the removal of the latter to Spring Gardens. The retirement of Mr. Thomas

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Blizard, and some years later of Mr. George Young, threw a considerable proportion of the surgical practice of the city into the hands of Mr. Travers. His health was at that period delicate, and he was the subject of frequent and alarming attacks of *Palpitatio Cordis*. On several occasions he was thus attacked on professional journies; and in the class-room, while lecturing, so as to be unable to proceed. After repeated painful efforts to persevere, he, in common with his friends, deemed it prudent, in the session of 1819, to discontinue his clinical lectures,* of which he had delivered regular courses since his election to the Hospital; and to relinquish his co-partnership with Mr. Cooper in the surgical course delivered at St. Thomas's Hospital. The same circumstance compelled him to decline the Professorship of the College, which had been more than once proposed to him.

In 1811, Mr. Travers communicated to the Royal Society, *Experiments shewing the effects of Injuries of the Abdomen and Intestinal Canal.* The paper was accepted by the Council, but withdrawn by the author, for a distinct publication, in the following year. In 1813, he was elected a Fellow of the Society. In 1827, he was chosen President of the Hunterian, and, in 1828, President of the Medico-Chirurgical Society. In 1833, he became a Member of the Council of the College of Surgeons, and of the Veterinary Examining Committee; and, on the formation of her present Majesty's Medical establishment, he had the honour to be appointed one of the Surgeons extraordinary to the Queen.

Since the Session of 1834, he has resumed his lectures in Surgery, at St. Thomas's, in conjunction with Mr. Tyrrell; and on the anniversary, in February 1838, delivered the Hunterian Oration to the Members of the College of Surgeons. Mr. Travers has been twice a widower. In 1813, he married the eldest daughter of George Millett, Esq., one of the Directors of the East India Company; and in 1831, the youngest daughter of Colonel Stevens, a gentleman of Somersetshire. He is the father of twelve children, and his eldest son is a Member of the Profession.

Mr. Travers has communicated largely to the Transactions of the Medico-Chirurgical Society; and has published several works, some of which have been translated on the Continent, and two re-edited in America. As a testimony of the value attached to them, he has been honoured with the Diploma of many learned and scientific Institutions in various parts of Europe. The papers in the Medico-Chirurgical Transactions, are ten in number:

1. (Vol. II. p. 1.) *A case of Aneurism by anastomosis in the orbit, cured by the application of a ligature to the common Carotid Artery.*

* Upon one occasion the attack was so severe and protracted that he was not expected to leave the Hospital alive.

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This is interesting, as the first example of the employment of such a remedy in this disease, and of its complete success; also as being the second case upon record, of the successful ligature of this artery. An engraved portrait of the woman operated upon is given, first, as she appeared prior to the ligature being applied to the artery; and secondly, as she appeared two years after the operation.

2. (Vol. IV. p. 278.) *Observations on the Cataract.*

3. (Vol. V. p. 391.) *Further Observations on the Cataract.*

These papers contain a description of the various species of Cataract, and point out the eligibility of the respective operations, and the circumstances essential to their success. Mr. Travers justly remarks, that "the exclusive preference given by operators to one method, and consequently the frequent mal-appropriation of the remedy to the case, has proved the most common cause of failure, in the treatment of the disease." A perspicuous detail of the various kinds, such as is given by Mr. T., is of very essential importance, and the distinctions are very satisfactorily given. The adaptation of Mr. Saunders's method to some cases which admit of no other, from the softness of the lens, is ably demonstrated. An excellent plate, representing ten varieties of this disease, accompanies the paper.

4. (Vol. IV. p. 435.) *Observations upon the Ligature of Arteries, and the Causes of Secondary Hæmorrhage; with a suggestion of a new Method of employing the Ligature in cases of Aneurism.*

5. (Vol. VI. p. 632.) *Further Observations on the Ligature of Arteries.*

6. (Vol. IX. p. 405.) *Two Cases of Aneurism, in which the temporary Ligature was employed.*

Nothing can be more embarrassing to the surgeon than the occurrence of hæmorrhage after operations—nothing is more calculated to alarm the patient, or if extensive, to check that process of reparation which is required. The valuable work of Dr. Jones, on Hæmorrhage,* pointed out to surgeons, in the most satisfactory manner, the mode adopted by nature, to produce the obliteration of a vessel, and that this is permanently effected by an inflammatory adhesion of its internal surfaces. If adhesive inflammation be therefore checked by the loss of contact, or the excitement diffused and extending ulceration, failure in the object intended must necessarily

* "A Treatise on the Process employed by Nature in suppressing the Hæmorrhage from divided and punctured Arteries, and on the use of the Ligature; with observations on Secondary Hæmorrhage." 8vo. Lond. 1805.

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follow; hence, the great importance of effectually securing the obliteration, and avoiding at the same time every superfluous pressure, or other irritation. Mr. Travers thinks a single ligature the most likely means of securing an obliteration of a vessel—a single ligature, such as will cause a simple incision of the internal coat of the vessel, without occasioning injury also to its more exterior coverings. The ligature, a small round one, which he considers as superior in all circumstances, he therefore recommends (in the first two papers) to be retained on the artery for a few hours only, and then removed. Mr. Travers made many experiments to ascertain the precise effect produced by the application of different kinds of ligatures, and the result may be stated as favourable to a small round ligature, which gives a clean and narrow incision; the flat ligature, as it approaches to the form and size of the round one, he found to imitate its operation; but it failed to produce a simple incised wound, the one most favourable to union, by the adhesive process. The medical student will do well to peruse the first paper, in which he will find a concise statement of the process occasioned by a ligature, and the mode which nature adopts to separate it from the vessel after its object is effected. The varieties which occur, and the occasional causes of failure, are also pointed out with equal ability.

The *second* paper details a variety of experiments upon animals, to shew at what period obliteration of the vessel takes place, which usually occurred after twelve hours, upon the continuous and truncated carotid artery of the horse. Mr. T. has also experimented with the Compressor of Professor Assalini, the operation of which he shews to be like to that of the ligature, obliterating the artery by exciting inflammation of its internal coat; but as no lesion of that tunic is produced, the inflammation is excited upon a continuous surface, and therefore requires a longer time to produce the effect than a ligature. The union of the sides of a vessel, Mr. T. says, "is never immediate or by direct contact, but by the medium of lymph effused. The ultimate operation is, the removal of this lymph, and the gradual conversion of the vessel into a cord, by a process of absorption.

In the *third* paper, Mr. Travers carried into effect upon the human species, his proposal relative to the temporary employment of the ligature. The first case was an aneurism of the brachial artery, the consequence of a wound received in bleeding. The ligature was allowed to remain on the vessel during fifty hours. The patient quitted the hospital one month after the performance of the operation, and it was ascertained that he had recovered so as to be able to fight two sharply-contested battles, three months from that time, he being a noted pugilist in his county. The second case was one of Popliteal Aneurism. The ligature on the femoral artery

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was allowed to remain twenty-seven hours. At 4 P. M., on the 29th of November, 1817, the ligature was withdrawn; at seven, a faint pulsation was perceived in the aneurismal sac; the pulsation continued distinct; and on the 6th of December, a roller was applied to effect pressure from the knee to the groin, and continued during an entire month; the pulsation in the sac being thereby rendered more feeble. Pain in the sac, however, ensued, and on the 12th of January, 1818, the patient was again operated upon, the artery being tied about two inches above the place at which the former ligature had been applied. The latter ligature came away on the twelfth day, and the man did well. Upon this case Mr. T. remarks, that no expectation of cure of aneurism ought to be entertained, whilst any pulsation in the sac continues, and that non-pulsation in the sac is a sign auspicious or otherwise, simply as it stands connected with increase or diminution of bulk and pain. It is impossible to pass by this paper without expressing thanks to Mr. T., for its publication. He is entitled to the thanks of the profession, and all who are interested in diminishing the sufferings of their fellow creatures. He found, by this operation, that it was not applicable to the human subject, and he not only determined to abandon it himself, but communicated an account of the case to the Medico-Chirurgical Society, that others might not be tempted to perform an useless operation. He thus revokes the opinion formerly given in its favour, seeing that the length of time which the ligature requires for securing the obliteration of the vessel is such, as invariably to induce the suppurative process, and that consequently no benefit is obtained by the removal of the foreign body.

7. (Vol. VIII. p. 231.) *Observations on Rupture of the Stomach.*

The cases here detailed, arose from ulceration. They are happily of rare occurrence, and medical art avails nothing for their relief.

8. (Vol. XV. p. 195.) *Observations on the Local Diseases termed Malignant.*

9. (Vol. XVII. p. 300.) *A Sequel to the foregoing Paper.*

In this important contribution to Morbid Anatomy, Mr. Travers sets out with dividing chronic local diseases into tractable and intractable; a division undoubtedly simple in its nature; but I fear little likely to be satisfactory, as a disease may be tractable in one state and intractable in another, yet its essence is not thereby any way affected.

The object of these papers is to present graphic descriptions of the Scirrhous and Medullary Carcinoma in the several regions of the body, with cases and illustrations derived from the Author's practice.

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A scirrhous tumour Mr. T. holds to be, in the first instance, a local and single disease; and the evidence in support of this opinion, to be found in the many cases on record, of recovery after its removal, and no return of it during the remainder of the patient's life, are too well attested to admit of any doubt upon the subject. Scirrhus is essentially connected with secretory structure, and occurs in no other; it is an adventitious, not a converted or changed structure, and rarely shews itself before the age of 45, and it seems to be somewhat connected with certain climacteric changes. Mr. T. fixes the period at which the scirrhus becomes a constitutional disease at a period considerably anterior to the occurrence of ulceration. The Medullary Carcinoma of Mr. T. is the Fungus Hæmatodes of most modern writers, and differs from the Scirrhous Carcinoma, inasmuch as it affects all the textures of the body, and its appearance is not restricted to any period of life. I have a preparation of this disease to an extensive degree, and which went on to sloughing in the ancle of a child, but little more than a year old. It appears to be truly a constitutional and a malignant disease. Mr. T. has never known a person survive this disease after its removal by the knife, more than four years, and in very few instances so long; my own practice confirms this observation.

As to the actual origin and nature of Cancer, Mr. T. thinks that the formation and circulation of a poison in the blood is the only notion competent to explain the universality of the same species of malignant disease, by which he means its simultaneous or successive appearance in remote parts of the individual. The *second* part of this paper may be called the practical one, and proposes to treat of the different parts of the body in which malignant diseases have been seen, and they are arranged—

1st. Of the malignant diseases of the Face and Head.

2nd. Of the malignant diseases of the external conglomerate glands, viz., the Salivary, the Mammary, and the Testicle.

3rd. Of the malignant diseases of the Organs of Generation in both sexes.

4th. Of the malignant diseases of the Trunk, including the Viscera; and the Extremities.

To do full justice to such a subject many volumes would be required; but Mr. T. has at least the merit of concisely arranging the whole, and I will venture to hope, that to this extensive division of Surgical and Medical Inquiry, he will devote further attention and give particular elucidation. The first paper carries us through the first division relating to the Face and head; the second embraces those of the Trunk and Extremities. Mr. T. expresses an 'opinion, that "the medullary disease is the cancer

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of scrofulous habits," and "the great pathological distinction between scirrhous and medullary cancer (he says) consists in this: the first is generally topical, and without any evidence of previous disease gradually impregnates the system with the poison which it engenders; the second is, in its origin, a disease of the system, and its local manifestation, secondary. So that in the former there is a possibility, by early operation, of triumphing over the disease; in the second, we may gain a respite, but at the best of very short duration."

10. (Vol. XXI. p. 135.) *Removal of the Clavicle, with a Tumour situated in that bone.*

This is the first case upon record in this country, and the circumstances are interesting in several points of view. The tumour appears to have had a local origin, and a blow upon the bone gave rise to its formation in the medullary structure, by which absorption of the earthy parts was produced, whilst the boundaries of the tumour were formed by a dense fibrous expansion investing it on all sides. Removal of the clavicle is a formidable operation, and Sir B. C. Brodie assisted Mr. Travers on the occasion. The result was successful, and the boy, (ten years of age,) the subject of it, regained the full and free use of his arm.

"It is worthy of observation, that there is scarcely any perceptible falling forward of the shoulder, nor any restriction of the motions of the arm; he elevates it perpendicularly over his head, extends it horizontally, carries and rotates it behind the trunk, and performs the same extent and variety of circumduction, and with equal promptitude and power as the parallel movements of the other arm. Indeed, one of his amusements is rowing a boat upon the Thames. The production of bone of a cylindrical figure from the truncated sternal extremity of the clavicle extends at least two inches, and terminates beneath the centre of the cicatrix in a firm ligamentous band adherent to the skin."

In 1812, Mr. Travers published *An Inquiry into the Process of Nature in repairing Injuries of the Intestines: illustrating the Treatment of Penetrating Wounds, and Strangulated Hernia.* This Essay was well received, both at home and on the Continent, and was honoured with the approbation of Professor Scarpa. It contains a series of original experiments to determine the effects of Wounds of the Intestines, the mode of protection from their immediate consequences, and of their reparation by the adhesive inflammation of the Peritonæum; also of the operation of Ligatures and Sutures, and their separation into the Canal. It is an inquiry

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of much importance, as it relates to some of the severest injuries that come under the notice of the surgeon, and is closely connected with the subject of hernia. These conditions can only be treated in a rational manner, from inquiries similar to those contained in this work, and illustrated and explained by experiments similar to those herein detailed.

The following is, perhaps, the most novel and curious fact established by the author:—A ligature encircling and obstructing the small intestine of a dog, the continuity of the gut was restored without any permanent impairment of the animal's health. When examined, the only trace of the impediment was an indentation of the mucous coat of the bowel marking the ligature.

The pathological division of the work is chiefly designed to show that the *(quasi)* paralysed condition of the bowel which has been the subject of strangulation, after its replacement, is the proximate cause of failure of the operation; an opinion confirmed not less by the appearance which it presents on *post mortem* inspection, than by the advantageous operation of calomel, since exhibited in these cases, which has the property of quickening the secretion of bile; the natural stimulus to the muscular action of the bowel.

Another point urged is the necessity of non-interference with the stricture in mortification of the bowel, attended with artificial anus, the discharge being the source of ample relief to the symptoms, and the provision of nature for the cure of the discontinuity, being injuriously interrupted in such cases by the division of the stricture, which retains in continuity the divided extremities.

In the memoir of Sir A. P. Cooper, Bart., I have noticed the publication of a volume of Surgical Essays conjointly with Mr. Travers, in the year 1818. To this work Mr. T. contributed *three* papers: 1. *On Iritis; 2. On Phymosis et Paraphymosis; and, 3. On wounds and Ligatures of Veins.* The paper on Iritis treats of the deep seated inflammation of the eye, manifested by the appearance of the Iris, and Mr. T. particularly considers the subject in connexion with the constitutional signs of lues venerea, and during or following the action of mercury upon the system. This leads to a discussion of some practical importance; namely, whether Iritis can exist from syphilitic poison independently of any mercurial action, and whether Iritis can occur in persons from the employment of mercury, and not subject to a syphilitic taint. The result of this consideration appears to be that Iritis can exist under both these circumstances; but that it most frequently happens where the conjoined operation of the syphilis and mercury is present.

To Professor Beer, of Vienna, I believe, surgeons are indebted for the

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employment of mercury in the cure of the various inflammations of the eye unconnected with syphilis;* but Dr. Farre was the first in this country to recommend it in idiopathic as well as syphilitic iritis.† Mr. Travers observes that mercury is now, "by a multitude of facts, incontestably established as a remedy of unfailing efficacy in the most acute form, and in every variety of inflammation of the iris." Bleeding in the early and acute stage of inflammation is necessary; and Mr. T. prefers cupping the temples to opening and dividing the temporal artery, the consequence of this latter practice being to increase the impulse of the circulation in the collaterals, and therefore followed by less permanent benefit. Mr. George Young had observed arteriotomy to be followed by an aggravation of the ophthalmia, and he offered this argument in explanation of the fact.

The paper on Phymosis and Paraphymosis urges with great propriety the attention of the practitioner to the inflammatory state of the parts, and of the evils produced by an exhibition of mercury under such circumstances.

The paper on Wounds and Ligatures of Veins, is also of practical utility. Mr. Hunter was the first to point out the inflammation to which the inner tunic of the veins is liable; and rationally to explain the consequences sometimes arising from venæsection. Mr. T. makes in this paper, a statement, as to tying the veins after amputation, which, I trust, is no longer to be considered as having an existence—namely, that "many of the older operating surgeons in the country, army, and navy, still adopt the practice, and are unwilling to believe that it can ever be productive of mischief." Mr. T's. paper abounds with cases of inflamed veins having a fatal issue, which he accounts for by considering the importance of the veins in the animal economy, the extent of surface of the venous tubes, and the diffused and disorganized character of the inflammation.

In 1820, Mr. Travers published *A Synopsis of the Diseases of the Eye, and their Treatment.* This is the application of the Hunterian principles of inflammation to the diseases of the eye, and was the result of the author's observation during his connexion with the Eye Infirmary. The work speedily reached a third edition, and has been many years out of print. It was translated into Italian by Dr. Apolloni, of Pisa, and re-edited by Dr. Delafield, of New York. The subject has since been much drawn out, and given birth to elaborate volumes of high merit. The work is preceded by an anatomical description, and a sketch of the Physiology of the Eye and its appendages. The pathological part is arranged according to the membranes, the humours,

* Auswahl am dem Tagebuche eines praktischen Augenartztes, von G. J. Beer.

† Saunders on Diseases of the Eye.

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and the appendages, and the third part gives the treatment of the diseases of these several parts. It is an ably condensed system of ophthalmic surgery, and one of its great merits is, that of being the result of the author's own observation, rather than a compilation from the works of other writers. The best proof of its value that can be afforded is, that but few synopses have been more generally acknowledged by the profession.

In 1824, Mr. T. published *An Inquiry into that disturbed state of the Vital Functions usually denominated Constitutional Irritation:* and, in 1834, *A further Inquiry respecting Constitutional Irritation, and the Pathology of the Nervous System.*

These must be noticed together, and they form a truly philosophical work; the result of the author's mature experience and reflection, to which, whatever may be its merits or defects, it is impossible to do justice in the compass of the brief critical notice compatible with the plan and scope of this publication. Revision and condensation may much increase its usefulness among that class, not the most numerous of the profession, to which it is addressed.

The first volume treats of the constitutional irritation, which is the *direct* consequence of local injury on operation: the second of the irritation, which a morbid state of the constitution *reflects* upon injuries and inflammations. The author adopts throughout the dynamical theory of the Nervous system in pathology, and refers to it a large share in the production and maintenance of disease. The facts, upon which his doctrines are founded are abundant, and many original views are interspersed with his reasonings. The intention and spirit of the work is to arouse the minds of the profession from the single and servile cultivation of a material and mechanical art, to a scientific study of the laws which regulate the vital functions in health, and their derangement in disease; and upon this foundation to build a rational system of surgical pathology.

In 1826, Mr. T. printed, in the first number of the Edinburgh Journal of Medical Science, *An Account of a Wound with Protrusion of the Stomach, the arch of the Colon, and the entire large Omentum, successfully treated; with a Classification of similar Injuries upon record.* Recoveries from accidents of the description of that detailed in this paper, are of rare occurence. A female, 53 years of age, and the mother of nineteen children, in a fit of despondency, inflicted a wound on herself, by which the viscera escaped from the abdomen. The omentum was detached to some extent from the stomach, and this organ had received two wounds, one a peritoneal graze, half an inch in length, the other a perforation of the coats which admitted the head of a large probe. Mucus was observed to issue from this orifice; a silk ligature was placed round the opening, and the protruded

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parts were replaced, the whole being secured by the quill suture. She craved for food on the sixth day, and was allowed it. In the course of two months she recovered and quitted the hospital.

In 1828, Mr. T. printed a small volume, entitled, *Observations on Venereal Affections*. It constituted an Anniversary Oration, delivered to the Hunterian Society. The tendency of the argument is to prove, the identity of the gonorrhœa and the lues from the difference between an inflamed surface and a wound—the liability to constitutional disease in all cases of the latter, whether the communicant be the subject of gonorrhœa only, or of syphilis—the character and severity of the constitutional symptoms to depend on the previous and existing state of the recipient, as regards previous syphilis, scrofula in the habit, and the action of mercury. There are many points deserving of attention in this little pamphlet; indeed, the whole of its contents merits close investigation. To discuss only a few of the main points of it in this place would be impossible—it is incompatible with the nature of this publication, which can only refer the medical inquirer to the work as one from which he may derive much useful information, and have his mind directed to subjects of great practical importance.

Mr. Travers's last production was in 1838. *The Hunterian Oration, delivered before the Royal College of Surgeons, at their Anniversary*. Twenty-five anniversaries have now been celebrated by the chief members of the Council of the College, and it is no little praise to say, that the Oration of Mr. T. deserves to be ranked among the best that have been delivered. The first part is historical, and refers to the rise and progress of Surgical Science, which is brought down to the time of John Hunter, whose talents and genius become, of course, the theme of eulogy. Of the character of this extraordinary man, I have already delivered my opinion, in his published memoir. Mr. T. justly speaks of him in the following manner:

"It is to his discoveries as an observer, sagacious, comprehensive, and profound, of the animal machine and its economy, in health and in disease,—his developement of the phenomena which characterize inflammation in all textures, in its several aspects, stages, and processes, of the signs by which they are governed, the consequences to which they lead, and the modes of treatment by which they are influenced and regulated to subserve nature's and our purposes,—it is to these that we point with a national and honest pride, as to the column upon which are engraved, in imperishable characters, the surgical triumphs of John Hunter."

From the preceding sketch of the labours of Mr. Travers, it will be evident that he has been a most zealous and efficient observer of the operations of nature, both in health and in disease. He has enjoyed abundant opportunities

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of practice, upon a large scale, both in public and in private, and he has taken care that these grand sources, by which mankind may be so much benefited, should not be neglected by him for want of cultivation. Archbishop Markham has said, that "no high point of excellence was ever attained, but by a laborious exercise of the mind," in accordance with the Horatian maxim—

"Nil sine magno,
Vita labore dedit mortalibus."

Mr. Travers has been not only eager himself to obtain knowledge but also to instil into the minds of the students the necessity of close application and inquiry; and in his addresses on Clinical subjects, he has never failed to impress this upon their attention in the most decisive manner. Some of these *Lectures* have been printed in the St. Thomas's Hospital Reports, with an enumeration of which, I must conclude this article.

1. *Introductory Clinical Lecture*, p. 1. 2. *On Mortification of the Hand and Fore-arm following Contusion*, p. 29. 3. *On Retention of Urine, arising from Gonorrhœa*, p. 44. 4. *On Absorption of a Portion of the Cranium following a contused wound, with remarkable Symptoms of Cerebral Disorder*, p. 107. 5. *On Cases of Strangulated Hernia*, p. 162. 6. *On Perinæal Abscess communicating with the Urethra, without Stricture*, p. 195. 7. *On Retention of Urine from Stricture*, p. 197. 8. *On Perinæal Abscess and Extravasation of Urine arising from Stricture*, p. 202. 9. *On Abscess in the Perinæum independent of Urethra—Abscess following Inflammation of the Urethra—Urethral Fistulæ, their formation, natural and artificial—Extravasation of Urine—Ruptured Urethra—Impermeable Stricture*, p. 208. 10. *On Encysted Tumour—Diffused Tuberculation*, p. 339.

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James Ware

JAMES WARE, F.R.S.

&c. &c. &c.

"Thy bell has tolled!
—But in thy place among us we behold
One that resembles thee."

ROGERS.

LORD BACON has observed, that "the weakness and credulity of men is such, as they will often prefer a mountebank or witch, before a learned physician." The history of British Ophthalmology would afford a most striking example of the truth of this remark. On no organ has quackery been more fully exercised than upon the eye: and when we reflect upon the importance of vision to the enjoyments of life and the cultivation of the intellectual powers, our surprise will be diminished at the circumstances which a detail of the progress and practices of professed oculists would so readily furnish. It is not my intention to enter upon this unproductive field to any great extent; but a few remarks, as affording evidence of quackery, may not be wholly inappropriate as an introduction to the memoir of a surgeon, who has contributed largely to rescue the department of medical science, to which he devoted himself, from the hands of ignorant pretenders. Till within a very recent period the surgery of the eye had not been made the particular study of men versed in the general principles of their science; men, whose education enabled them to take a survey of disease, founded upon a regard to general principles, which alone can qualify for, or give success to, practice. The department was more especially considered as mechanical; and he who was most adroit in the use of his instruments, was looked upon as the most scientific oculist. But, how can mere expertness and despatch, in a mechanical art, be conceived to apply to intellectual operations? General principles are absolutely necessary to form

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the able practitioner, whose object and duties are not confined to mere manipulation. An American physician,* of great celebrity, has justly observed, that "it is the misfortune of every profession and art to be burdened and disgraced by ignorant pretenders; but in none is imposition more common, or more difficult of detection, than in medicine." Why this should be the case is by no means difficult of solution; for the art is, in a great measure, so occult, and lies so entirely beyond the cognizance of all who have not made it their particular study, that it offers not only the greatest facilities, but even impunity, to those who are disposed to take advantage of the ignorance and weakness of their fellow men. Hence it is, that from the very first dawnings of the medical art down to the present moment, QUACKS have flourished and fattened on the spoils of the human race. Empirics have ever been remarkable in the medical profession to be as illiterate and shallow, as in their manners they are proud, conceited, and overbearing. Dr. Johnson defines them to be "such persons as have no true knowledge of physical practice, but venture upon observation only. They practise by rote, without rational grounds. Empiricism signifies quackery." Empirics are enemies to theory—they reject all reasoning—affect to disbelieve what they cannot comprehend, and draw the most extravagant conclusions, with an assurance as if proceeding from the best established and admitted facts. Whilst, however, I condemn empiricism, and contend for the exercise of the human reason, in the treatment of diseases, I would not be supposed to lean too ardently to the side of theory. Theory may be false or true: false theory has often given rise to the most unsuccessful and dangerous practice. In former days it occasioned inflammatory disorders to be treated by heating remedies; and with the ancients was carried so far as to refuse to their patients, during the first two or three days of inflammatory fevers, the indulgence of a little water to quench their thirst; thus, most dangerously aggravating the complaint, and opposing the powerful instinct of nature.

False theoretical views have led to the greatest absurdities in practice. Van Helmont died of a pleurisy, refusing to be bled—Erasistratus would not admit either of bleeding or the exhibition of purgatives in any disorder. A physician, on the contrary, mentioned by Lieutaud, caused one to be bled a hundred times within a year; and thus, by his erroneous views, occasioned the destruction of his patient. These are examples of the abuse of theory: but they have led to the rejection of all theory by some, in consequence of

* Dr. Beck.

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their pernicious effects. "As well, however, (to use the words of an able writer,) might we deny the utility of reason and speech, bestowed by indulgent Heaven on man alone, in heightening the pleasures of society and assisting in the conduct of human affairs, because we so frequently find that reason is erroneous, and the faculty of speech abused in such a manner, as to be a disgrace to the human understanding." Let the study of medicine be cultivated with the greatest caution, as well as the most liberal and extended views—by these will hypothesis be confirmed or rejected, and theoretical truths firmly established, on the sure basis of nature and experience. An art then, of all others the most noble, will be cultivated by men of erudition and judgment to the great benefit of mankind.

Quacks have uniformly received the patronage of the great. The records of Ophthalmic surgery will confirm this statement. It is not, however, necessary to look back farther than the reign of Queen Anne. Her Majesty's patronage of a Sir William Read is well recorded. She bestowed the honour of knighthood upon this empiric, and Gwinnett has left some lines in allusion to this event:—

"The Queen, like Heaven, shines equally on all,
Her favours now without distinction fall.
Great READ, and slender HANNES, both knighted show,
That none their honours shall to merit owe.
That Popish doctrine is exploded quite,
Or Ralph had been no Duke, and Read no Knight,
That none may *virtue*, or their *learning* plead,
This has no *grace*, and that can scarcely *read*."

Faithorne executed a portrait of this individual, whose work now lies before me, and what will the regularly educated and experienced practitioner think of "Her Majesty's Oculist and Operator in the Eyes in ordinary," who could seriously recommend, in cases of opacity, "fretting upon the cornea with an eye-spoon, like a grater;" and commend, as good, the practice of "putting a louse into the eye when it is dull and obscure, and wanteth humours and spirits." "This (he says) tickleth and pricketh, so that it maketh the eye moist and rheumatick and quickeneth the spirits." Sir Thomas Browne alludes to this practice in his Common-place Book: "What to be hoped from that feminine practice, which I have known in pearl of the eye, to put a louse into the eye at night?" The work of Read to which I have made reference, abounds with similar ridiculous conceits; and the whole is detailed with extraordinary bombast and vanity. The conceit of Sir William Read, however, bears no comparison with that of the

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CHEVALIER JOHN TAYLOR, whose works contain the most remarkable histories, with the greatest display of inordinate self-sufficiency, perhaps, upon record. This person was oculist to George II. He had travelled over nearly the whole civilized world, and published an account of his life and travels,* and he relates some very amusing circumstances, and gives altogether a picture of what may be regarded as a most finished empiric. He was educated at Cambridge, and asserts that, upon the recommendation of Dr. Desaguliers, he was induced to devote his attention exclusively to the eye and its diseases. He published various works unworthy of notice, printed them in different languages, and was altogether a very singular man, having evidently great knowledge of the weaknesses of human nature, and great shrewdness to turn those weaknesses to his own advantage. The preface to his travels contains the following remarkable piece of bombast, and will serve as an excellent specimen of the language of the mountebanks of former times :—

"Oh! thou mighty; oh! thou sovereign pontiff; oh! thou great luminary of the church; given to mankind, in the sense of so many nations, as a star to the Christian world. The great excellence of whose diadem is faith. Whose glory is the defence of virtue. Who can believe, that you, most holy father, who art placed as the first inspector of the deeds of man, would proclaim to all the inhabitants of the earth, as you have done, your high approbation of my works, but by the voice of truth.

"Oh! ye imperial; oh! ye royal; oh! ye great masters of empire; who have so far extended your benevolence, as to be witnesses of my labours. Behold me at your feet! To you, with all humility, I now appeal. Have ye not, oh! ye great powers, been graciously pleased to declare, under your hands and seals, the happy event of my enterprizes? How often have you condescended to behold the transports that affected the mind, when from before the dark eye, by my hands, the dismal veil was removed, the curtain drawn; and saw, by my labours, this beauteous little globe re-assume its native power, and

* "The History of the Travels and Adventures of the Chevalier John Taylor, ophthalmiator, pontifical, imperial, and royal, to the Kings of Poland, Denmark, Sweden, the Electors of the Holy Empire, the princes of Saxegotha, Mecklenberg, Anspach, Brunswick, Parme, Modena, Zerbat, Loraine, Saxony, Hesse Cassel, Holstein, Salzbourg, Baviere, Leige, Bareith, Georgia, &c. Pr. in Opt. C. of Rom. M.D. C.D. Author of forty-five works in different languages; the produce, for upwards of thirty years, of the greatest practice in the cure of distempered eyes, of any in the age we live: who has been in every court, kingdom, province, state, city, and town of the least consideration in all Europe, without exception. Written by HIMSELF. This work contains all most worthy the attention of a traveller; also a dissertation on the art of pleasing, with the most interesting observations on the force of prejudice; numberless adventures, as well amongst nuns and friars, as with persons in high life, &c., &c. Lond. 1761, 8vo."

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was again a lucid orb! Who then can suppose, that you, the rulers of man—the protectors of virtue—the greatest lustre of whose diadem is justice, would point out, as it were, with the sceptre in hand, me alone amongst all mankind for these things, but from the strongest evidence that could be possibly desired for the support of truth?

"Oh! ye empresses; oh! ye queens; great partners of the governors of the people of the earth—you, whose gentleness, whose goodness of heart, have so often engaged your awful presence on these occasions—what satisfaction have you expressed at seeing the blind, by me, enabled to behold again the marvels of heaven! And finding them prostrate at your feet, expressing their joy at what they first saw; because 'twas you they saw—the first object of their duty—the highest in their wishes. Have you not with your own gracious hands affirmed, that these things you have seen: and where is the man so daring, and so imperious, as to call in question what you have said?

"Oh! ye great people of Rome, once masters of the willing world, governors of that great mistress of our terrestrial globe, have you not, in the sacred name of your people and senate, declared with one voice, in praise of my works? And who will venture to say, that a body so illustrious, who for so many ages was revered as the rulers of all, could possibly err in their defence of a cause like mine?

"Oh! ye learned; great in the knowledge of physic; excellent in virtue; you, who are placed as at the head of human wisdom; have you not told to mankind how highly you approved my deeds? Have you not, under your hands and seals, declared to the world how much you were pleased at my labours? Have you not often received me as a brother and introduced me as a member of your bodies, with every mark of the most singular esteem; presenting me with diplomas to show my authority, mixt in your praises, for your motives, my knowledge in theory, my success in practice, summing up all with the most elevated reflections from the excellencies of my deeds; and promising that my memory should to you be ever dear."

Taylor was a native of Norwich, and he modestly suggests that it is possible, it, having been the place of his birth, may not, one day, be judged unworthy the notice of posterity! He travelled from 1727 until 1761, visiting most parts of Europe, and some of Asia. From his narrative it would appear that he had seen everything—was initiated into all the mysteries of courts, made acquainted with all state matters, was the bosom friend of sovereigns and potentates, and even in the confidence of the Pope himself. Of Benedict XIV. he tells the following anecdote:—

'In Rome, at one of my private audiences with the late sovereign pontiff, amongst other things, the most holy father said to me, with great composure, 'My son, would not you be very sorry if all eyes were like my eyes? I, says this great good man, can see to read without glasses:' to which I most respectfully answered, that 'I should indeed be very sorry.' 'How,' says the religious father; 'because,' said I, 'though heaven, in making your holiness the great luminary of the church, and amongst other great blessings gave you good eyes, that you might see that all was right; yet the same Providence that made your holiness what you are, made me what I am, and knew that I must live; and I most humbly hope, that your holiness will not blame me for praying for my daily bread.' To which the

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most holy father answered; 'These things, my son, concern this world only;' to which I instantly most respectfully replied, 'it was for this world only that I have said these things; for here is my present business.' "

The characters I have just described are now unknown to medical or surgical practitioners. Great as their fame may have been in their day, they have left behind them no improvements, no methods which could ensure to them a posthumous regard. The advances made in Ophthalmic Surgery have all been by men whose names are celebrated in professional history, for their general knowledge of medical science. To Cheselden, to Warner, to Pott, to Bromfield, to Porterfield, to Sharp, and to others of more modern date, we are principally indebted, in this country, for the improvements of this branch of surgery. This brings me more especially to the subject of the present memoir:—

James Ware was born at Portsmouth, in the year 1756. His father was, for many years, the Master Ship-Builder of the Dock-Yard, at Deptford. He received his education at the Grammar School, and was then apprenticed to Mr. Ramsay Karr, surgeon of the King's Yard, at Portsmouth. Mr. Ware enjoyed abundant opportunities of gaining a knowledge of his profession, particularly as it related to accidents, numbers of which were constantly occurring to his notice. He witnessed also the practice of the surgeons of the Royal Hospital, at Haslar; and having passed his period of apprenticeship, he came to London, and entered at St. Thomas's Hospital, where, for three years, he assiduously attended to the instruction given by the medical officers of that establishment. That Mr. Ware distinguished himself by application to his studies, is apparent from the circumstance that Mr. Else,one of the surgeons of the hospital, selected him to be the Demonstrator of Anatomy, the last year of his continuance at the hospital.

Mr. Ware was fortunate in contracting an intimacy with Mr. Jonathan Wathen, a surgeon, who devoted himself principally to the treatment of the diseases of the eye; and by this gentleman he was invited to share in his practice, which he did, during a period of fourteen years. In a dedication of his "Chirurgical Observations relative to the Eye," published in 1805, he alludes to this connexion with every demonstration of respect. It was in the year 1791, that this partnership was dissolved, and Mr. Ware then engaged in private practice, solely on his own account. His practice was principally upon diseases of the eye and its appendages; but it was not confined to that organ. He possessed a knowledge of the general principles of surgery, had attended to surgical cases of every description, and manifested his fitness for such by various observations and works, to which it will be necessary presently to allude.

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JAMES WARE, F.R.S.

Mr. Ware's first published work appeared in the year 1780. It was entitled, *Remarks on the Ophthalmy, Psorophthalmy, and Purulent Eye.* A second edition was published in 1787; and a third in 1795: it was afterwards re-published, in a collection of *Chirurgical Observations relative to the Eye.* The work commences with a brief account of the eye, and its appendages. This is followed by a description of the Ophthalmy, the symptoms of which are very clearly given, and the effects consequent upon the continuance of the inflammation. Mr. Ware was, I believe, the first surgeon to give the name of *Psorophthalmy* to the inflammation and ulceration of the eye-lids. He shows its frequent connexion with a scrophulous constitution; but considers it as sometimes quite independent of any other complaint. The application of the *Unguentum Hydrargyri Nitrati*, still in general use, formed the local means upon which he placed chief reliance. For the *Purulent Eyes* of new-born children, he strongly recommends the *Aqua Camphorata* of Bates's Dispensatory, which has often been found to be highly beneficial, and condemns the employment of poultices and other emollient applications. To this work, Mr. Ware has appended a *Case of Gutta Serena, cured by the use of Electricity.*

In 1791, Mr. Ware published a translation from the French, of Baron de Wenzel's *Treatise on the Cataract.* This work proceeded from the son of the celebrated operator, whose mode of treatment it fully displays. Mr. Ware has appended notes, wherein he differs from the Baron, and rendered many of the descriptions more explicit than they appear to be in the original work.

In 1792, Mr. Ware printed *Chirurgical Observations relative to the Epiphora, or Watery Eye; the Scrophulous and Intermittent Ophthalmy; the Extraction of the Cataract; and the introduction of the Male Catheter.* Some of these observations had been read before the Medical Society of London. The Epiphora, here particularly considered, is that which arises from an obstruction to the free passage of the tears through the nasal duct. He details three cases treated successfully by Anel's method. The cases of Intermittent Ophthalmy detailed, were probably connected with some syphilitic taint, and they yielded to the use of the Oxymuriate of Mercury. Scrophulous Ophthalmy is decidedly benefitted by Peruvian Bark, and it should be conjoined with soda, which is always advantageous in these cases. The observations relative to Cataract, refer to the necessity of assistance in supporting the upper eyelid, and fixing the eye in the operation; and those on the introduction of the Catheter relate to the form of the instrument, which is recommended to correspond as nearly as possible to the shape of the urethra, and to the manner in which it can be most felicitously employed.

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JAMES WARE, F.R.S.

In 1795, Mr. Ware published *An Enquiry into the Causes which have most commonly prevented success in the operation of extracting the Cataract; with an account of the means by which they may either be avoided or rectified. To which are added, Observations on the Dissipation of the Cataract, and on the Cure of the Gutta Serena. Also, Additional Remarks on the Epiphora, or Watery Eye.* It is too much the practice of professional writers, to put forth all the successful cases and advantages of a mode of treatment, without fairly stating the disadvantages or accidents to which it is liable. Mr. Ware justly condemns such a procedure; and the *first* part of his work is directed to this purpose, as it regards the operation for the extraction of the Cataract. He considers the accidents as arising, 1. *From making the incision through the Cornea too small.* 2. *From wounding the Iris.* 3. *From suffering a portion of the Vitreous Humour to escape.* 4. *From extracting only a part of the Cataract, and leaving the remainder behind in the Eye.* 5. *From suffering foreign bodies, after the operation, to press unequally on the ball of the Eye.* 6. *From prematurely exposing the Eye to the action of too strong a light.*

In the *second* part of the work, Mr. Ware relates *An instance of Recovery of Sight, by the Dissipation of the Cataract, which had occasioned Blindness in one Eye for eleven years.* This case had arisen from external violence—inflammation occurred, and was met by vigorous treatment, which was unexpectedly followed by a restoration of the transparency of the crystalline lens, and a return of the powers of vision. Two other cases of cataracts, in which the opacity was dispersed, without the aid of any operation are detailed. Several cases of opacity from external violence are also alluded to, and these are stated to have been relieved by the external application of æther.

The *third* part of the work is devoted to *A Description of Four Cases of the Gutta Serena, cured by Electricity: to which is added, An Account of Four Cases of the like nature, in which the chief means of Cure was a Mercurial Snuff.* In many cases of Gutta Serena, electricity is found to be highly beneficial; yet it is a means seldom resorted to by the practitioners of the present day. Like to other remedies put forth as certain methods of cure, it has been almost altogether abandoned, because it has not fully answered the expectations improperly raised in its favor. Gutta Serena may be dependent upon a variety of causes, and require an equal variety in the modes of treatment.

In 1798, Mr. Ware published *Remarks on the Fistula Lachrymalis; with the Description of an Operation considerably different from that commonly used; to which are added, Observations on Hæmorrhoids, and addi-*

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tional remarks on the Ophthalmy. This work is accompanied by a plate, representing the anatomy of the lachrymal canal, that the nature of the operation may be completely understood. To open the obstructed duct, and to maintain the freedom of the passage, Mr. Ware proposed the method of operating now usually adopted by the introduction of the style. The methods formerly employed, in accordance with the recommendation of Mr. Pott and Mr. Warner, of opening the cyst, dilating it with sponge tent, passing a piece of catgut or other substance, or puncturing the os unguis, have been much simplified by Mr. Ware. Mr. Wathen endeavoured to cure the fistula lachrymalis by passing a metallic tube or canula into the nasal duct. Heister had proposed to do the same thing; but through the os unguis itself. Want of success in many cases operated upon according to Mr. Wathen's mode, induced Mr. Ware more particularly to direct his attention to the subject; and the result was, the adoption of the operation as it is usually performed at the present day, by an incision into the nasal duct, and the subsequent insertion of the silver wire furnished with a flat head, and which has been found to be both safe and efficient. Mr. Ware thinks it adviseable not to perform it upon children under eight or nine years of age; but I have repeatedly done it without any disagreeable consequence following its performance.

The tract on *Hæmorrhoids* is very judicious; and subsequent writers on the subject have not failed to make their acknowledgments to Mr. Ware for his observations. The formidable operation of the extirpation of the hæmorrhoids has been reduced by Mr. Ware's remark, that the pain felt by the patient is not equally from all the tumours that may be present. It proceeds generally from one, or at most two only; and these, upon examination, are found to be much harder and more inflamed than the others. Removal of these is sufficient to relieve the sufferer; and this may be effectually done with a pair of scissors—when the other tumours are found to recede and disappear.

The *Additional Remarks on the Ophthalmy* relate to the advantages to be derived from the application of the Thebaic tincture, according to the London Pharmacopœia, in 1745, and not the ordinary Tincture of Opium of the present edition.

In the year 1805, Mr. Ware published two volumes of *Chirurgical Observations relative to the Eye, with an Appendix, &c.* These consist of reprints and of additions to his Remarks on Ophthalmy, Psorophthalmy, &c., on Epiphora, and on Fistula Lachrymalis. Also, in general surgery, on the introduction of the Male Catheter, and on the Treatment of Hæmorrhoids. At the close of the tract is a case of Ophthalmy, with violent

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pain consequent on a Gutta Serena. In this case, a considerable quantity of a yellow watery-coloured fluid was accumulated between the choroid coat and the retina; the retina itself having collapsed, and resembling a cone of a white colour, the apex of which was at the entrance of the optic nerve, and its basis surrounding the crystalline humour; the vitreous humour being entirely absorbed. All the usual means of relief failing to improve the condition of the organ, Mr. Ware resolved upon making a puncture and discharging the fluid. It was in a very large quantity, the tension of the eye by the operation was removed, the pain abated, and the patient recovered.

The *second* volume of the Chirurgical Observations consists of the translation of Baron de Wenzel's Treatise on the Cataract, and Mr. Ware's own inquiries upon the subject, as previously published in 1791 and 1792. To these Mr. Ware has added a catalogue of mementos relating to the operation, which he made it a constant rule to peruse on the morning of every day in which he was engaged to perform the operation. The volume likewise contains the case of a young gentleman who recovered his sight when seven years of age, after having been deprived of it by cataracts before he was a year old. This case was read before the Royal Society, in 1801, and published in the Philosophical Transactions. The tract on the dissipation of the Cataract arising from external violence, and that on the cure of a Gutta Serena, conclude the volume. To the latter some additional cases are appended, to point out some varieties in the appearance and progress of the disorder, as well as in the treatment which is required to accomplish its cure.

In 1808, Mr. Ware had his attention strongly directed to the epidemic ophthalmy which prevailed to a great extent; and he published a tract entitled "*Remarks on the Prevalent Ophthalmy, which has lately been Epidemical in this Country.*" The resemblance of this ophthalmy to that which had committed such ravages in the army in Egypt, in 1801, gave to it, by some individuals, the appellation of the Egyptian Ophthalmy. Purulent ophthalmy, however, has not been confined to Egypt; it had been witnessed in other countries prior to its appearance in that climate, where also various species of it had been observed. Mr. Ware assigned to the prevalent ophthalmy the title of *purulent*, since the profuse discharge of a purulent fluid seemed to distinguish it from all other kinds. It resembled also the purulent ophthalmy of new-born children. Mr. Ware gives an account of its symptoms, appearances, and varieties, in different individuals. He notices the resemblance which it bears to that species of ophthalmy, which in many instances has either accompanied or followed the common

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gonorrhœa; and seems to be strongly impressed with an idea that the two disorders bear a close reference one to the other. The occurrence of purulent ophthalmy in infants, whose parents have been the subject of leucorrhœa, &c. seems to strengthen this opinion. Mr. Ware does not attribute every case of the purulent ophthalmy to the application of gonorrhœal matter to the eye; but in the majority of instances, he says, he was able to trace a connexion between the ophthalmy and some degree of morbid affection in the urinary canal. He conceives that something more is necessary to account for the spread and influence of this ophthalmy than atmospheric action, the combined influence of heat and light, burning dust, heavy dews, &c.: and the explanation which occurs to him as most natural is, that this particular disorder is only communicable by absolute contact; that is, by the application of some part of the discharge which issues, either from the tunica conjunctiva of an affected eye, or from some other membrane that secretes a similar poison, to the tunica conjunctiva of the eye of another person. This disease was most destructive of vision. Copious and sudden abstractions of blood were found, in the army, to be the best means of arresting the progress of the disease; but it was not found necessary in private practice to carry venæsection to such an extent as in the army. Mr. Ware strongly recommends scarifying the vessels of the conjunctiva, of which practice I had opportunities of seeing the good effects at the time our soldiers returned from Egypt. As an external application, Mr. Ware preferred the aqua camphorata to all others. When this disorder pursues its course in the most malignant manner, the cornea sloughs, or is ruptured, the humours are discharged, and the patient becomes easy. Blindness in these cases necessarily follows. Mr. Wardrop observed the ease which immediately followed the rupture of the cornea; and he anticipated nature, by making an opening and discharging the aqueous humour (which is known to be speedily regenerated) before any ulcerative action had commenced. I have noticed this great improvement in the treatment of the disease in the memoir of this ingenious surgeon; and Mr. Ware has given his powerful sanction to the value of the practice.

It remains to notice the papers communicated by Mr. Ware to different societies, and printed in their Transactions. To the Memoirs of the Medical Society of London, he contributed three papers:—

1. (Vol. II. p. 336.) *A Case of Suppression of Urine, occasioned by an Enlargement of the Prostate Gland. With some Brief General Strictures on the Use of the Male Catheter, &c.*

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2. (Vol. III. p. 12.) *A Remarkable Instance of Recovery of Sight by the Dissipation of a Cataract, which had Occasioned Blindness in one Eye for Eleven Years.*

3. (Ibid. p. 309.) *A Description of Four Cases of the Gutta Serena, cured by Electricity, &c.*

These papers have been already noticed.

In the Transactions of the same Society (Vol. I. p. 115.) there is a paper *On the Staphyloma, Hydrophthalmia, and Carcinoma of the Eye.* Staphyloma, Mr. Ware thinks, is produced both by a thickening of the cornea and a morbid accumulation of the aqueous humour behind it. Janin and Richter state that they have succeeded not only in removing the projection of an opaque cornea, but also in restoring its transparency by applications of the muriate of antimony. Mr. Ware condemns the use of caustics, from which he has witnessed much mischief, and seen no beneficial results. The authority of Scarpa on this subject may be added to that of Mr. Ware. The evacuation of the humours appears to be the only mode of treatment adapted to these unfortunate cases.

The term hydrophthalmia does not fully express the nature of the disease, which consists not merely of an accumulation of water, but of an enlargement of the whole eye, produced by an increase of the vitreous as well as the aqueous humours. These, however, are not the only causes to be particularly examined into, as the growth of tumours, collection of pus, &c. may equally produce the increase of size in the organ. These are circumstances which require the most careful attention on the part of the surgeon, as the means to be adopted must necessarily depend upon the accuracy of his diagnosis. The remainder of the paper relates to the distinction between Fungus Hæmatodes and Carcinoma, as it occurs in the eye. Extirpation of the organ is the only remedy, and that is even frequently unsuccessful.

To the Transactions of the Medico-Chirurgical Society (Vol. V. p. 255.) Mr. Ware furnished a paper *On the Muscæ Volitantes of Nervous Persons.* The variety of appearances assumed by the dark-coloured motes in the eyes of different persons is very remarkable. Their presence frequently impedes vision, though they may exist as connected either with defective or unimpaired sight. Mr. Ware gives an account of them as occurring in three cases as examples of the affection; and he thinks that the proximate causes of them is to be found in a pressure on one or more points of the retina, which are situated near the axis of vision, but not exactly in it.

To the Philosophical Transactions, Mr. Ware contributed two papers, of which the following abstracts appear in the journal book of the Royal Society :—

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1. "*Case of a young gentleman who recovered his sight when seven years of age, after having been deprived of it by cataract, before he was a year old, with remarks.* Read June 11, 1801. The subject of this case was the son of a clergyman in Somersetshire, who, in his early infancy, had every appearance of being a healthy, perfect child; but, when about a year old, was accidentally observed to be deprived of sight. A surgeon in the country pronounced that he had a complete cataract in each eye; and Mr. Ware, on being consulted, did not hesitate to decide that the only cure would be the removal of the opaque crystalline humour; but he added, that he did not think that the child would be fit for the operation until he was at least thirteen or fourteen years of age. At the age of seven, however, the child's parents brought him to London, in order to enable Mr. Ware to form an opinion from his own observation. A recent case, in which this eminent operator had succeeded to restore sight to a youth about fourteen years of age, without extracting the cataract, but merely by making a large puncture in the capsule, so as to bring the opaque crystalline into free contact with the aqueous and vitreous humours, having induced him to retract his opinion concerning the necessity of extracting the cataract, he proposed to perform the above operation immediately on one of the eyes of this new patient. This he effected without giving much pain: and in a few days the child described, without hesitation, all the objects that were set before him.

"The author draws a comparison between this case of restored sight, and those described by Mr. Cheselden, in the 35th volume of the Philosophical Transactions; and finding a considerable deviation in the results, he is induced to form several conclusions, which differ materially from those of his predecessors. These are briefly, that when children are born blind, in consequence of having cataracts in their eyes, they are never so totally deprived of sight, as not to be able to distinguish colours—that they have likewise some perception of distances: and that hence, when they recover their sight, they can immediately form some judgment both of colours and distances, and even of the outline of strongly-defined objects.

"That when children have been born with cataracts, the crystalline humour has generally been found, either in a soft or a fluid state; and that in these cases, if the capsule be simply punctured with a couching-needle, there is reason to expect that the opaque matter will sooner or later be absorbed, and the sight be restored; and that should any opacity in the capsule itself render this operation ineffectual, the other, viz., that of extraction, may still be recurred to with every prospect of success.

"Lastly, that this operation of couching being much more easy than that of extraction, it may be attempted at a very early period; and that thus the benefit of education may be afforded to children much sooner than if they were to wait till the proper age for extraction.

"Mr. Ware acknowledges, in a note, that about a month after the above operation, he couched the other eye of his young patient, but that he did not prove equally successful. This he ascribes to some opacity in the capsule, which was incapable of being absorbed. The eye, however, he adds, remained as fit as ever for another operation."

2. "*Observations relative to the near and distant sight of different persons.* Read November 19, 1812. The author states, in the first place, that he has rarely observed short-sightedness in children under ten years of age, and that he considers it as commencing generally between that period and eighteen; that it at first occasions so little inconvenience, that it is not noticed by those who have not access to concave glasses, and, consequently, is very frequently overcome by the natural efforts of the eye. Persons, on the contrary, in the

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higher ranks of society, who have it more in their power to indulge a slight weakness, by having recourse to short-sighted glasses, soon confirm the imperfection, and, in many instances, even render it worse, by employing glasses deeper than are necessary.

"For the purpose of instituting a comparison between the proportional prevalence of this defect in different classes of society, Mr. Ware made inquiry in the three regiments of Foot Guards, containing nearly 10,000 men, and also in the two Universities, Oxford and Cambridge. In the Guards short-sightedness among the privates is scarcely known; and not more than half-a-dozen recruits are said to have been rejected for this imperfection in the course of twenty years. In the Universities, on the contrary, the numbers are so considerable, that in one of the Colleges in Oxford, it is said that of one hundred and twenty-seven persons, so many as thirty-two have used either a hand-glass or spectacles. It is thus proved that short-sightedness is corrected in one class of persons, and encouraged in the other; and it is evident that even in those who absolutely require glasses, it may be increased by using such as are deeper than are really necessary, or counteracted by employing the lowest with which the eye can see with comfort.

"It is observed, however, that extreme short-sightedness sometimes occurs in children from visible imperfection in the form of the cornea, and sometimes arises as an accidental and temporary consequence of general debility, and is then removeable by chalybeate medicines and bracing applications.

"Dr. Porterfield has observed, that the pupils of short-sighted persons are, in general, more dilated than those of others; but Mr. Ware does not admit this to be generally the case; neither does he admit the common opinion to be well founded, that the magnitude of the pupil varies according to the distance of the object viewed. He names, however, one extraordinary instance of a lady, whose pupil contracts only when she views objects at the distance of nine inches, but at other times is dilated very nearly to the full extent of the rim of the cornea.

"Mr. Ware has also made experiments similar to those of Dr. Wells, on the alteration of the power of the eye during that dilatation of the pupil, which is produced by the external application of belladonna. Those of the author were attended with the same result of lengthening the focus of either eye to which the belladonna was applied, without affecting the customary range of vision in the other eye.

"The author observes, that short-sightedness does not depend on the greater or less concavity of the cornea alone, since its distance from the retina, and the convexity of the crystalline also, must be taken into the account.

"It has sometimes been observed, that old persons have, in a short time, recovered the perfect sight of younger persons; and this has been explained by Dr. Porterfield, by a supposition of the absorption of fat from the bottom of the orbit, allowing the axis of the eye to become more elongated: but Mr. Ware thinks it more likely to have arisen from absorption of the vitreous humour, in consequence of which the sclerotica would be pressed inwards, and that then the axis of the eye would be elongated.

"Mr. Ware observes, that persons in general who use glasses, possess the power of seeing both near and distant objects with the same glass; but that this is not the case with those who have been couched, who always require a different glass to enable them to see distant objects, proving thereby that the adapting power of the eye depends on the presence of the crystalline. In consequence of this defect, such persons judge very imperfectly of distances.

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"In comparing the range of adaptation possessed by short-sighted persons with that of others, the author conceives the range of the former to be much less, his estimate being made by the number of inches through which the range of distinct vision extends.

"The author, being himself very short-sighted, remarks, that the change that has taken place in his own eyes by age does not accord with the observation generally made, that short-sighted persons become less so as they advance in life. In his eyes the shortest distance of distinct vision remains nearly where it was; but the power of discerning distant objects is so far lessened, that for this purpose he requires a glass one degree deeper than that which he commonly employs, and with which he formerly used to distinguish distant as well as near objects; and as he is acquainted with other instances in which a correspondent change has taken place, he is of opinion that such changes are by no means unfrequent. However, in two of those here enumerated, this change was produced by evident disease; and in one of them it was only temporary. A third instance mentioned of an eye becoming less long-sighted, is occasioned by unusual efforts of adaptation. An instrument-maker, by employing a microscope, for the purpose of dividing with accuracy for several days together, is afterwards able to read without spectacles for a few weeks; but his sight then gradually elongates, till he again has occasion to employ himself in dividing.

"Two other cases are also mentioned, of long-sightedness reduced to vision at a moderate distance, both arising from disease, and both speedily relieved by evacuating remedies."

These constitute the published works of Mr. Ware. In 1818 his son, Mr. Martin Ware, reprinted and edited several of the tracts written by his father, to complete a collection of his works.

Mr. Ware's claims to the respect and gratitude of his profession and the public, do not rest merely upon his researches into the history and nature of particular diseases, and his publications upon them. The benevolence of his disposition prompted him to seek to alleviate the sufferings of his fellow-creatures, and to relieve their distresses. The School for the Indigent Blind was most essentially promoted by his exertions—he must be regarded as one of the founders of this most excellent institution. Upon the records of this establishment I find that "the *first* meeting of the Provisional Committee for managing the affairs, was held on Tuesday, January 14, 1800, at which were present—

"Lord Teignmouth, V. P., in the chair; Mr. Samuel Bosanquet, jun., treasurer; Mr. M. Martin, Mr. (afterwards Sir Thomas) Bernard, Mr. James Ware, Mr. John Townsend, Mr. Thornton, Mr. Houlston, and the Rev. Dr. Grindlay." Mr. Ware's purse was liberally opened to forward its objects, and thus not only to secure a temporary asylum to those whom Providence had thought proper to afflict with loss of sight, but also to teach them trades and offices, by which their minds would be occupied, and their temporal wants supplied. The first institution of this kind was established at Liverpool, in the year 1790.

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JAMES WARE, F.R.S.

In 1788 several benevolent members of the medical profession associated together to establish a Society for the Relief of the Widows and Orphans of Medical men in London and its vicinity. The most eminent and the most wealthy have liberally supported this institution; and Mr. Ware took so great an interest in its welfare, that in 1809 he was elected the president. Under the care and judicious management of the directors, the funds of this society have now accumulated to a very considerable amount, and the claims made upon them have been liberally and justly awarded. Mr. Ware urged upon the profession the necessity of supporting this institution, in a *letter* addressed to the members in 1810, which was printed and published by order of the court of directors.

In 1787 Mr. Ware married the widow of N. Polhill, Esq. (the daughter of Robert Maitland, Esq., a London merchant of eminence), and by this marriage had a large family of sons and daughters. At his death, which took place in April, 1815, he bequeathed the sum of £200 to the Society for the Relief of the Widows and Orphans of Medical Men, and £100 to the School for the Indigent Blind. He was a Fellow of the Royal and Antiquarian Societies, the Medical Society of London, and the Medico-Chirurgical Society. Mr. Martin Ware, his eldest son, whose edition of the tracts on the Diseases of the Eye has been mentioned, may be said to follow in the footsteps of his father—to be a son truly worthy of such a sire—alike distinguished for talent, benevolence, and amenity of manners.

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BIOGRAPHICAL MEMOIRS

OF THE MOST CELEBRATED

PHYSICIANS, SURGEONS,

ETC. ETC.

WHO HAVE CONTRIBUTED TO

THE ADVANCEMENT OF MEDICAL SCIENCE.

BY

THOMAS JOSEPH PETTIGREW, F.R.S., F.S.A., F.L.S.

Member of the Royal College of Surgeons; Surgeon to the Asylum for Female Orphans; late Senior Surgeon of the Charing Cross Hospital, and Lecturer on Anatomy, Physiology, and Pathology; and on the Principles and Practice of Surgery; Doctor of Philosophy of the University of Göttingen; Member of the Royal Asiatic, Entomological, Numismatic, and other Societies; Corresponding Member of the Academy of Arts Sciences, and Belles Lettres, of Dijon; Société Academique de Médicine of Marseilles; &c. &c.

Vol 4

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John Brown

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JOHN BROWN, M.D.

&c., &c., &c.

"———— Thou art gone;
And he who would assail thee in thy grave,
Oh, let him pause!"

ROGERS.

THE subject of the present memoir was born of humble parents, in the village of Lintlaws, or Preston, in the parish of Buncle, in Berwickshire, at the close of the year 1735, or the beginning of 1736. He displayed, at a very early age, great quickness of apprehension, and made such extraordinary progress, that, before he had completed the fifth year of his age, he had read through almost the whole of the Old Testament. At a grammar-school, at Dunse, he acquired the rudiments of the Latin tongue, under a teacher of great erudition (Mr. Cruikshank), who took much interest in the success of his pupil. He soon reached to the head of his school, and obtained the necessary preliminary knowledge to entering into college. At a very early age he had been deprived of his father, and his mother had married again. Their circumstances did not suffice to do more than place him to a trade, and it was intended that he should be a weaver. A short time only, however, was he trammelled in this mechanical employment. The insuperable aversion he manifested to the loom and the shuttle, induced his previous teacher to offer further tuition to him, gratuitously; and he resumed his studies, with a view of ultimately becoming a preacher and supporter of a sect of seceders, with which both his parents were connected. He soon, however, quitted the sect, and attached himself to the established church. He filled the situation of usher at Mr. Cruikshank's school, and had abundant opportunities of making an intimate acquaintance with the best Latin classics. His memory was very retentive, and he brought it to apply with

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great readiness, by immediately referring to any passage he might require from his favorite authors. Nor did the Greek language and literature escape him: of this language he was enthusiastically fond, and he eagerly perused every Greek author he could procure.

Upon the generous recommendation of Mr. Cruikshank, he was engaged as tutor in a gentleman's family; but not receiving that attention which he thought due to his situation, his independence of spirit manifested itself, and he abandoned his charge. He then went to Edinburgh, entered the philosophy classes, and supported himself by giving instruction to his fellow-students in the Greek and Latin languages. So successful were his exertions, that numbers flocked to him for improvement. He continued his studies, and proceeded so far, in accordance with his original intention, as to deliver a divinity lecture in the hall of the University—a probationary exercise for his introduction into the church. This, his intention, was however abandoned, by having been recommended to a pupil in medicine, as a fit person to put into Latin an inaugural thesis, to be delivered at the time of graduating. In this exercise he succeeded so perfectly, and with such rapidity, that he felt an inclination to alter the direction of his studies, and exclaimed "that he had now discovered his strength, and was ambitious to ride in his carriage as a physician." Henceforth, he devoted himself to medicine: to mature his plans, he repaired to Dunse, was again usher to Mr. Cruikshank for twelve months, and then returned to Edinburgh.

By private tuition, Brown was able to support himself; but his receipts were inadequate to the supply of means for the payment of the fees demanded for attendance upon the medical classes. The manner in which he overcame this difficulty, is alike honourable to his learning, and to the liberality of the professors, to each of whom he addressed a Latin letter, couched in the most elegant manner, expressive of his situation; and, in return, he was presented with free tickets of admission to the lectures. It is needless to say that his progress was remarkable: he had received that preliminary knowledge in classics, mathematics, logic, philosophy, &c. which highly qualified him to avail himself of medical knowledge, and he became a great favorite with the professors. His vivacity and his wit, his great conversational powers, and his facility for maintaining an argument, rendered him an especial favorite also with the pupils: his society was much courted; and it is said, that to him was always assigned the seat of *magister convivii.* He had hitherto confined himself to giving instruction in the classics; this task he now abandoned, for one more especially directed to medical studies: in short, he became what my medical readers will well understand—*a grinder:* he prepared young men for holding disputations in

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the Latin tongue upon the subject of their theses, many of which were altogether composed by him for his pupils. Several of these are to be found in a collection published at Edinburgh, in 1785, in 4 vols. 8vo. under the title of *Thesaurus Medicus*.

In 1761, Brown became a member of the Royal Medical Society of Edinburgh, and was elected president in 1776, and again in 1780. This society gave to him the means of displaying his oratorical powers. His reputation increased, and his finances improved. He had already obtained the favor and patronage of the celebrated Cullen. He established a boarding house in 1765; and, relying upon the popularity he enjoyed, and the recommendation of Cullen and others, he ventured upon marriage with the daughter of a respectable citizen of Edinburgh, of the name of Lamont. It is much to be feared that his associates, chiefly young men, by whom he was looked up to with admiration for his learning and his wit, led to too great a love of the pleasures of the table, and induced habits opposed to a necessary frugality. His affairs became embarrassed, and he was under the necessity of making an arrangement with his creditors.

Brown had been engaged by Cullen to give instruction to his children. Among the professors of the University, Cullen became his patron: and he doubtless found him of essential service, for he was an elegant Latin scholar, whilst Cullen was deficient in classical acquirements. The popularity of Cullen at this period entailed upon him a correspondence with the most eminent scientific men of the age, and it was conducted chiefly in the Latin language. Brown was appointed his Secretary; and it is not difficult to estimate the importance of his services to such a master. That Cullen appreciated their value, must be evident from his name being given to more than one of Brown's children; and more especially is the estimation in which Cullen held Brown's attainments shown by the fact that he permitted him to deliver an evening lecture, from his own MS., in illustration, and in repetition, of that which had been delivered in the morning. The system of Cullen, must therefore, at this time, have been espoused by Brown; and with all that ardour which eminently characterizes a generous mind towards a benefactor, he has been represented as warmly contending for the truth of Cullen's doctrines, and visiting those who questioned their solidity with severe reprehension. From such an intimacy, it is but reasonable to expect that Cullen should have felt himself bound to promote Brown's interests. Brown studied to perfect himself in anatomy and botany, with the view of qualifying for a chair in one of the colleges of America, which appears to have been an object of his ambition. All his biographers omit notice of his having visited Holland to acquire this information; but thither

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he went, and was exceedingly well received at Leyden, particularly by Professor Van Doeveren, who presented to him a copy of his works. He brought home with him also a copy of Albinus's splendid Anatomical Tables. Brown was, however, too useful to be permitted by Cullen to depart from Edinburgh. He persuaded him to relinquish his design, and promised to exert his interest towards obtaining for him the first vacant chair at Edinburgh. There is but too much reason to believe that he did not employ the influence he possessed in favor of his secretary and assistant; and, after more than one disappointment, Brown dissolved his connexion with his former preceptor and friend.

Brown was now thrown entirely upon his own resources; and he commenced as a lecturer, in Latin, upon a text book he had before prepared, and in promulgation of his own doctrine contained in the *Elementa Medicinæ*. He was attended by many pupils of distinguished ability; and it is not improbable that the opposition offered to him, by Cullen and his adherents, tended considerably to give to them a publicity they might not otherwise have obtained. The arena on which discussion chiefly occurred was at the Royal Medical Society, where the combatants on each side waged furious war. The debates were remarkable for the vehemence and intemperance of the speeches, and to such an extent was this violence carried, that duels were not unfrequently the result. A law was consequently enacted, ordaining that any member challenging another, for what had passed in the debates, should be expelled the Society. Abroad, the excitement was equally great. The spread of his doctrines, on the continent, produced the most lively sensations. His name became celebrated in France, Spain, Italy, even in Poland, and Russia; but in Germany, especially, his opinions had great supporters, and he was looked upon as the medical Luther. At the University of Göttingen, the pupils were excited to rebellion by the intensity of the discussions, and the military were called in to quell the disturbance.

Brown, it will be remarked, had not yet graduated, and his doing so at Edinburgh, after the dissolution of his friendship and connexion with Cullen, was quite out of the question. He, therefore, took a degree at St. Andrews, Sept. 21, 1779; and, upon presenting himself to Dr. Flint on this occasion, he pleasantly remarked, "that, although he did not enjoy the title of M. D. himself, he had obtained that honour for not a few."

The eminent position which Cullen held at the University of Edinburgh, must necessarily have occasioned Brown many opponents; and the attacks made upon him, and the retaliation in which he indulged, were

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distinguished by too great asperity. His own independent conduct, and the intemperance into which his convivial habits had led him, tended much to injure Brown in the estimation of many; and false reports of his doctrine and of the practice based upon it, were most industriously spread to his disadvantage. To remove the effects of misrepresentation, Brown determined to print his *Elementa Medicinæ*, the first edition of which appeared in 1780. The publication of this work served only to increase the bitterness entertained for its author. Hapless was the condition of that pupil who should present himself for a degree, if his discourse countenanced in any manner the 'Brunonian Doctrine.' Allusion to the "Elements" was most vigorously interdicted. The effect of this upon Brown's class was soon but too visible—his income was sensibly diminished; indeed, his pecuniary difficulties at one time obliged him to continue his course of Lectures in a place of confinement, where, from some then unknown benefactor, he received the present of a note for £100. This generous individual was afterwards traced, and found to be the patriotic Lord Gardenstone. Assailed on all sides by the friends and adherents of Cullen, and giving, it must be confessed, too much opportunity for scandal by his own imprudence, encumbered with a large family, oppressed by debt, disappointed in all his hopes of attaining the object of his ambition—a chair at the University, he determined on quitting Scotland, and settling in London. In 1786 he therefore took his leave of Edinburgh, accompanied by his eldest son and daughter. His fortitude did not forsake him on this occasion; and his son has given a curious picture of his father's conduct during the journey:—

"In almost every village or town which lay in his route, on enquiry, he generally found either an old pupil, or former fellow-collegiate, established as a practitioner. In which case, a message was dispatched to the country doctor, intimating that a gentleman at the inn wished to see him. As no man was ever more generally beloved, the meeting was always as cordial as it was unexpected. A convocation of the gentlemen in the neighbourhood was the usual result; and, though the celebrity of his name had already preceded him, the delight which his conversation afforded them, surpassed what the fame of his talents had given them reason to expect; for in point of profundity of conversation, or brilliancy of wit, no man ever, in a greater degree, possessed the power of fixing the attention, and raising the admiration of a company. The importunities and hospitality of his old friends protracted his journey so long, that, in order to expedite the remainder of it, he thought proper to dismiss his post-chaise at Doncaster, and proceed in a stage coach, that he might not any longer be tempted to stop on the road."

This passage gives strong evidence of Brown's love of society, and the enjoyment of those pleasures which are incompatible with the full exercise

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of professional duties. When we consider that he was now in his 51st year, had a wife and eight children to support, and no means to accomplish this, but by the uncertain receipts to be obtained by the delivery of lectures, or the still more uncertain emoluments derivable from practice among those to whom he was in a great measure unknown, one is surprised that his spirits should have sustained their customary buoyancy and upheld him under such discouraging circumstances and prospective embarrassments.

Upon his arrival in London, Brown did not find the golden anticipations of his friends realised: patients did not flock to him in crowds; his house was not beset with invalids seeking his advice: no, it was thronged with his admirers—it became the resort of many ingenious and able men, whose society however, served in no inconsiderable degree to add to his already too great and pressing difficulties. He resided in Golden Square, and he lectured at his own house, and also delivered three courses at a well-known house in Fleet Street, called the Devil Tavern, which was situated near to Temple Bar. From these lectures he received but little pecuniary emolument; practice he had little or none; and by his writings he received only the small sum of 50*l.* which was given to him by Johnson, the well-known bookseller, for a translation of his "Elementa Medicinæ." The original agreement for this work is now before me, and it runs thus:

Feb. 20, 1788.

"Memorandum of an Agreement entered into between Dr. Brown, author of *Elementa Medicinæ*, and J. Johnson, of St. Paul's Church Yard, Bookseller, that the said Dr. Brown shall translate the said work into English, and allow the said J. Johnson the liberty of printing for sale One Thousand copies, for the sum of Fifty Pounds, which said J. Johnson engages to pay him, upon the said Translation being finished and put into his hands."

"JOHN BROWN,
"J. JOHNSON.

"Thomas Fulhame.

"Proposed to be finished in fifty days."

It is worthy of remark, that so short a period is granted for the performance of the translation; yet it was completed in a less time. His son says, that his father began and finished this task without an amanuensis, in precisely *twenty-one days*, during which he commonly rose at four o'clock in the morning, but never lay beyond five. While he was engaged on this labour, he lived well, but with unusual temperance in the use of the bottle; and he was then observed, by his friends, to look better in point of health than he had done for some years.

Upon his arrival in London, he had to furnish his house; and for the pay-

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ment, when it became due, he was unprepared: he was arrested, and incarcerated in the King's Bench Prison. By the kindness of two friends, Mr. Murray and Mr. Maddison, he was liberated. His affairs being subjected to an arrangement, a brighter day seemed to open to his view. He planned various works, and contemplated the possession of a considerable practice: his patients were increasing in number, and almost every day brought him some new accession. He was beginning to be esteemed by the London practitioners, and his opinion sought after. He had entered into an engagement with a bookseller for a *Treatise on the Gout*, for which he was to receive £500, and he was projecting a *Review*, and other works. In the midst of these expectations he was struck with apoplexy, which at once frustrated his designs, and extinguished his life. This took place on the 7th Oct. 1788, in the fifty-third year of his age. His death excited much sensation; and, upon the very respectable authority of Dr. Joseph Franck of Vienna, it may be stated, that many of the students of the University of Pavia, upon hearing of the event, went into mourning in honour of his memory. The public prints abounded with accounts and anecdotes respecting him, most of which had but little truth for their foundation. The sympathy of the English public was generously enlisted in behalf of his family; and a subscription was entered into, to relieve their necessities.

Dr. Brown was remarkable, in his youth, for his personal strength and courage. His person was corpulent, and indicative of high living; his countenance was naturally ruddy, and his eye particularly keen and expressive. The portrait affixed to this memoir is taken from an original miniature, in the possession of his son; and I am assured that it is a very faithful resemblance. He was liable to occasional attacks of sore throat, and to fits of the gout. Although robust in appearance he was not of a strong constitution. I learn, that the zephyr of a summer evening could not play about him, without too often verifying the apprehension that it would bring on catarrh or erysipelas: he often complained of cold in his knees, and even on a summer's day would order a fire in his study.

Dr. Brown was greatly respected by many influential persons in Scotland; but he did not much cultivate their acquaintance. The late Lord Elcho highly esteemed him for his learning and his genius. This nobleman was head of the masonic fraternity in Scotland, an institution to which Brown was much attached; and he established a lodge (the Roman eagle), in which the mystic ceremonies of the craft were performed in the Latin language. The Marquis of Graham, late Duke of Montrose, entertained a great regard for him; so did many of the clan of Campbell; Crosbie, the ornament of the Scottish bar; Little, the advocate; and many others of

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great celebrity and talents. Dr. Parr entertained a high opinion of the learning of Brown, and determined upon paying him a visit. I have often heard him to speak of Brown in eulogistic terms. He one day went to his house in Golden Square, and was announced: Dr. Brown exclaimed, "Are you the great Author of Bellendenus?" "Yes," replied Parr, "and come to visit the first Latinist in Europe." And they both laughed heartily. Dr. Beddoes edited an edition of the Elementa Medicinæ in 1795, after the death of Brown, and prefixed to it a memoir of the author, which justly gave great offence to his family, for it depreciated his genius, and endeavoured to put a construction upon his manners and conduct injurious to his memory. He has accused him of being open in his avowal of irreligion; he ridicules even his figure, and likens him to Sancho Panza. He says, that in the use of intoxicating liquors he observed no moderation. These accusations excited the displeasure of his friends: Parr felt incensed, and even offered to write the life of Brown, if Mackintosh, who had been his pupil, would undertake to furnish the medical part. In the *Bibliotheca Parriana* there is noticed a copy of the "Elementa Medicinæ," which was presented to Parr by the author, with an appropriate Latin inscription.

Beddoes has endeavoured to degrade Brown, by describing his departure from Scotland to London as an *embarkment*. The notice of his journey, before related, will show that this was not the case: and his daughter has given me some particulars, from circumstances within her own remembrance, which are too interesting to be omitted here. She thus describes his departure from his native land:—

"From the 'Black Bull,' at a place called the Pleasance, near his own house, Richmond Street, he entered a post-chaise, I think called the 'Diligence,' attended by my mother, a party of ladies and gentlemen, his devoted friends, several of his pupils, a Dr. May, I believe Dr. Sutton of Greenwich, and others; and the hand that took his and placed him in the carriage, was his esteemed pupil, James Mackintosh, afterwards our celebrated senator; and thus, with his beloved daughter Euphemia at his side, and his son, William Cullen, at the other, the persecuted Brown, the immortal medical genius of his country, quitted it for ever!"

The charge of irreligion against Brown deserves to be noticed. Beddoes puts into his mouth an expression made upon the receipt of a bit of good fortune: "Another such event, and I'll believe in a Providence." From information I have received from his highly talented and excellent daughter, Elizabeth Cullen Brown, I am disposed entirely to disbelieve this statement. It is an expression that has been applied to others, and it does not comport with the high-minded Brown, whose sense of rectitude, and whose

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devotion to the welfare of his children cannot be questioned. I learn that the mother of his wife, an old lady of the Presbyterian creed, for whom Brown entertained the most filial affection, was in the practice every Sunday evening of hearing his children repeat their catechism, psalms, and hymns, and, when no company with him, in his presence. One evening, Miss B. tells me, they had all passed through her pious examination, when the father, walking up and down his drawing-room, turned to her and said, "My dear madam, I cannot tell the pleasure you afford me in your religious instructions to the children:" and on these occasions, a sermon of Dr. Blair's, of which he was a great admirer, closed the Sunday evening.

Dr. Brown's domestic conduct was unexceptionable. His ardent attachment to his wife, and his deep attention to the education of his children, a great part of which was undertaken by himself, and the knowledge of Greek and Latin which he instilled into the female branches of his family as well as the males, show his great solicitude for their welfare. He was a man of genius, and learning, and wit; and every particular, therefore, which relates to such a man in his private hours is of interest and value. His daughter tells me that he would often open his study door, call to her mother to come to him, and bring the *creatures* with her; and thus surrounded, no screeching of his little boys, no rattling of his younger girls upon their old harpsichord, nor the sportive jokes of his beloved Euphemia, could annoy him: on the contrary, his pen then flew rapidly. This reminds me of an anecdote of another excellent and amiable man, the late Mr. Roscoe of Liverpool. When visited by a friend, he was found writing, surrounded by his numerous family, amusing themselves in noisy gambol. "Good God! Roscoe," exclaimed his friend, "how can you write amidst the noise of these children?" "My dear fellow," replied Roscoe, "they are all my own." Dr. Brown's only surviving daughter has portrayed, with a powerful pen, and I doubt not with equal fidelity, the characteristic traits of her father, in a novel, entitled, "Passion and Reason," under the character of Dr. Maitland.

Dr. Brown was an honourable man. Although his necessities were great, and the demands of a numerous family most pressing, he indignantly spurned at a proposal to give currency to a nostrum intended to be put forth as "Brown's Exciting Pill," and for which, during his confinement for debt, he was offered a sum by no means contemptible. From all that can be looked upon as authentic, he certainly possessed great goodness of heart. His rectitude supported him under many severe trials and great privations. "He despised riches, detested every thing base, and possessed such openness of heart as to be liable to be taken in by every knave."

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There was certainly much simplicity of character—often the attendant of great genius.

I come now to speak of his works. These consist of the *Elementa Medicinæ*, which has gone through numerous editions, and been translated into many languages. The first appeared in 1780. In the preface to this work, the author tells us that for twenty years he paid undeviating attention to every subject connected with medical science; and that he, notwithstanding, felt himself in the situation of a traveller in an unknown country, who, after losing every trace of his way, wanders in the shades of night; and that it was only between the fifteenth and twentieth years of his studies, that he obtained a faint gleam of light, that dawned upon him like the break of day. This occurred in the thirty-sixth year of his age, when he first experienced a fit of the gout. His general habit was to live freely; but for the six months previous to this attack he had observed a more sparing diet. At the expiration of six years he had another fit, after living unusually low for five or six months. He was, in consequence of the disease, placed upon low diet, and enjoined great attention to his regimen for an entire year, during which period he experienced no less than four attacks, and passed the whole time, with the exception of fourteen days, between limping and excruciating pain. This condition appears to have given rise to the *Brunonian Doctrine*. He traced the occurrence of the disease, not to excess of vigour, but to *indirect* debility. He treated himself accordingly, and the result was favourable to the opinion he had entertained. He extended this practice to other diseaaes, and he established two classes, *sthenia* and *asthenia*, or those which are dependent upon an excessive application of the several powers that otherwise produce health, and those of an opposite or deficient character. The former were attributable to an excess, the latter to a deficiency of exciting power. The former were relieved by debilitating, the latter by stimulating, remedies. In this way Brown conceived he had reduced the doctrine and practice of medicine to scientific certainty and success. He did not waste his time by useless speculations on the causes of vitality; these he considered incomprehensible, and as having ever proved the bane of philosophy. He directed his attention simply to the phenomena of life. To all animated nature he assigned the possession of a quality, on which he considered life to depend, and to which he applied the term EXCITABILITY. This quality he considered to vary in different animals, and in the same animal at different times. The vivacity of the animal he made dependant upon the degree of its susceptibility of the action of EXCITING powers. These powers are of two classes, *external* and *internal*. The former consists of heat, food, wine, poisons,

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contagions, the blood, secreted fluids, and the air; the latter are the functions of the body, muscular exertion, thinking, emotion, and passion. Life he regarded as a *forced* state, dependant upon the presence of exciting powers, as much as of the excitability itself. If the excitement be too great, weakness is occasioned—this constitutes what he terms *indirect* debility; if, on the contrary, it be withheld, then weakness is induced; but it is of a different nature—it is *direct* debility. The powers acting upon the frame are stimulant, they produce excitement by expending the excitability. The seat of the excitability he considered to be resident in the medulla of the nerves and in the muscles. All diseases of the body he regarded as occasioned either by direct or indirect debility, in consequence of too much or too little stimuli. The general diseases arising from excessive excitement, are called *sthenic;* those that originate from a deficient excitement, *asthenic.* The indication for the cure of sthenic diathesis, he says is to diminish, that for the cure of asthenic diathesis is to increase, the excitement, till that degree, which constitutes the mean betwixt its extremes, and which is suited to good health, be restored.

Such is the doctrine of the *Elementa Medicinæ.* The feuds to which it gave rise, and the warfare carried on between the Brunonians and the Cullenians, are now, together with the greater number of the combatants, buried in the grave; and professional men of the present day can look calmly on and contemplate the genius and talents of the contending parties. Cool and dispassionate enquiry can now take place of the fierce contention which formerly existed, and the consequences of the different systems of medicine promulgated by their authors may be duly estimated. Neither the Cullenian nor the Brunonian system, it must be acknowledged, have wrought perfection in the practice of medicine; but each has had its influence in promoting the advancement of medical science. The system of Brown has doubtless had much influence in the practice of medicine; it has gone far to abolish the humoral pathology, and to introduce a more rational and philosophical spirit of enquiry. No science has probably suffered so much from the baneful effects of theory as medicine, and its progress has been thereby considerably retarded. The inductive method of reasoning introduced by Lord Bacon, dispelled the mysteries and artificial forms of the ancient philosophy. Hypotheses have, however, often led the way to great improvements in the science of medicine. They frequently precede the confirmation of truth, and the supposition is itself of great utility. It has been said, that the dangers of theory are the more to be apprehended because there is an almost irresistible propensity in the mind to favour and admire it. There is, it is true, a simplicity and a gran-

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deur generally thrown around it, which, while it gratifies indolence, by rendering laborious investigations useless, flatters intellectual vanity, by pretending to solve the intricacies of a whole science by a few general principles. It would occupy a volume to investigate all the particulars of the doctrine of Brown, to inquire into the adequateness of the explanation of the phenomena of life, the actions of the natural and hurtful powers, and the operation of remedies offered by the doctrine of excitement, the laws of excitability, and the theory of the operation of the exciting powers. Neither is it the object of the present work, which is to place before the reader, with the greatest precision and accuracy of which I am capable, a faithful account of the various theories that have issued fromthe press by those who have most zealously laboured to advance the improvement of medical knowledge. My intention is not to give a minute analysis, or to attempt to reconcile the discrepancies in the several systems that may be detected. I endeavour to place the subjects in as true and in as clear a light as in my power; and to direct the reader to the sources whence he may obtain the best information on them. I have neither the vanity to think myself qualified, nor the presumption to undertake, the passing of a definitive judgment upon the labours of those great men whose researches have served to enlighten a science so complex as that of medicine.

In 1781, was published *An Inquiry into the State of Medicine, on the Principles of the Inductive Philosophy, by Robert Jones, M.D.* This work has been suspected by more than one to have been the production of Brown himself. Beddoes says, "it is ill-arranged, tedious, uncouth, arrogant, and illiberal; yet it contains passages presenting juster views of medicine than I remember to have elsewhere seen, and conceived in the genuine spirit of Bacon." As to the real author of this production, Miss Brown writes to me as follows: "I feel it a duty due to the intellectual labours of my father to affirm, that the 'Inquiry into the State of Medicine,' is unquestionably his *own work;* his family well know it: and I remember thinking it very odd, *why* my father did not put his name to his own production, and feeling quite *dissatisfied* that he should have ascribed it to his pupil Jones."

In 1787, Dr. Brown published "*Observations on the Principles of the old system of Physic; exhibiting a compend of the new doctrine. By a Gentleman conversant in the subject.*" This contains a most violent and intemperate attack upon Cullen's doctrine of spasm.

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THOMAS COPELAND, F. R. S.,

SURGEON EXTRAORDINARY TO THE QUEEN.

&c. &c. &c.

'Nihil non laudandum."

PATERCULUS.

THOMAS COPELAND was born in May 1781, and is the son of the Rev. W. Copeland of Byfield in Northamptonshire, who died in early life and whose monument is copied in Baker's History of Northamptonshire. His professional education commenced at Chigwell in Essex, but afterwards was conducted principally with his maternal uncle Mr. Edward Ford, the well known author of "Observations on the Diseases of the Hip Joint,"* and surgeon to the Westminster General Dispensary. Having attended the medical classes in Great Windmill Street and St. Bartholomew's Hospital, Mr. Copeland was for several years attached to the Foot Guards; he afterwards was appointed one of the surgeons to the Westminster General Dispensary, and took up his residence in the house of his retired relative Mr. Ford, in Golden Square, where he has since resided, enjoying an extensive practice, principally among the higher ranks of society. His works are not numerous, but they are valuable, and directed to practical purposes. The general character they hold among the most enlightened members of the profession leads to regrets that he has not more extensively devoted himself to

* Mr. Ford also published several valuable papers in the London Medical Journal, among which are two elaborate essays on some cases of the spontaneous cure of Aneurism, which preceded and may probably in some degree have suggested Mr. Hunter's operation.

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the press, for his pages teem with instruction. Mr. Copeland's works are also of small bulk, and he offers a verification of the remark of old Francis Osborne, that "huge volumes, like the ox roasted whole at Bartholomew Fair, may proclaim plenty of labour, but afford less of what is delicate, savoury, and well connected than smaller pieces." There is, indeed, no redundancy in Mr. Copeland's writings; his object has been not to make books, but to point out what he considered as desiderata in certain points of surgery, and to give in as brief a manner as possible and consistent with perspicuity, all the information he possessed upon these subjects. His writings show that he attaches great importance to pathological inquiries, and he justly laments as a misfortune of surgery and consequently of society, that those diseases which are the produce of slow morbid alteration of parts have not met with more attention from the surgeon, and that the mode of treatment of them therefore, has been less cultivated and improved than their importance demands, whilst the operative part of surgery has been carried to a high state of perfection.

The late celebrated John Bell has, with the intimate knowledge he possessed of the history of medical and surgical science, and with the sagacity which characterises his writings, made some admirable remarks on the subject of operations, which eminently deserve the attention of the profession, and which I cannot do better than introduce in this place. In a "Short Preliminary Discourse on the Education and Duties of a Surgeon," prefixed to his "Principles of Surgery," he says,

> "In every profession, the daily and common duties are the most useful; and in ours the man who is capable of the great operations rises into public esteem, only because it is presumed, he who is the most capable in the higher departments of his profession, will best perform all its ordinary duties. Yet such is the natural horror at blood, and the hesitation and difficulties of the surgeon himself when any thing so daring as a dangerous operation is to be done; and such are the unceasing and anxious inquiries of friends, that operations, though the least part of our profession, strike a deeper interest into the public mind than the daily cures we perform. Operations usurp an importance in surgical education which they should not naturally have. Operations have come at last to represent as it were the whole science; and a surgeon, far from being valued according to his sense, abilities, and general knowledge, is esteemed excellent only in proportion as he operates with skill."

There is but too much truth in the foregoing statement; yet the eclat attendant upon operations has had one good effect—it has directed greater attention to be paid to anatomy. This department of medical education is

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now regarded as a distinct science and treated of accordingly. Formerly, books on surgery were preceded by observations on anatomical structure as necessary for the elucidation of the practical part that was to follow. This is now abandoned; it is no longer necessary, for every practitioner is presumed to be familiar with the structure of the whole of the human body. All the most celebrated surgeons of former days were distinguished from their brethren by their knowledge of anatomy. Look to the works of Ambrose Paré, of Heister, of Le Dran, of Petit, of Cheselden, &c. All these have obtained distinction by their acquaintance with anatomy; this has enabled them successfully to perform their operations and to discriminate with accuracy the various conditions of disease. Bell says,

"It is to those only who are skilled in anatomy that we ourselves would trust our health in case of disease, or our persons in any great operation. Even the ill-judging world decides exactly thus; for power blindfold and undiscerning as it often is, may put unworthy men into places of trust and honour; but can it procure for them confidence and the public esteem, or that character and lasting reputation which will always, I hope, be dearer to you than mere gain? By being so much exalted, they are but the more degraded. 'Poor rich men!'"

Anatomy and Pathology are studies in the practice of the medical profession that can neither be separated nor neglected, and to these essential considerations Mr. Copeland has directed the attention of practitioners more particularly in reference to the investigation of the origin and progress of disease in a class of cases to which, at the time when he wrote, very little regard had been paid. The surgery of Chronic Diseases had been much neglected from having been viewed principally in their latter or more advanced stages and not traced in successive steps towards those conditions. Mr. Copeland has called the attention of the profession to certain diseased organs the natural functions of which are of great importance in the animal economy and to the enjoyment of health and life.

In 1810, he first published *Observations on some of the Principal Diseases of the Rectum, &c.* A second edition appeared in 1814, and a third in 1824. The great variety of derangements and disorders to which those parts are liable, renders a minute attention to all circumstances connected with them of the highest importance. The difficulty often experienced in their treatment no less deserves the especial regard of the surgeon. Mr. Copeland thinks many of the cases formerly described as those of ileus,

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and other more chronic disorders of the bowels, referable to stricture of the intestines, and a consequent diminution of the capacity of the canal. He makes reference to a paper on *Schirro-contracted Rectum*, by Mr. Sherwin, to be found in the second volume of the Memoirs of the Medical Society of London, as giving the most perfect history of the disease; and it is one which will repay my readers the trouble of perusal. But Mr. Sherwin, like most other authors, has been satisfied with looking at the disease in its advanced state, and has only suggested means of palliation, or for the alleviation of pain. He looks upon it as a disease totally beyond the powers of medicine or surgery to relieve. He says it is "slow in its progress, but terrible in its consequences, it yields not to medical assistance; but must, under the best management, become ultimately fatal. It admits, however, of palliation, and if early discovered, will also admit of the last moments of the patient being rescued from unavailing, mistaken, and distressing attempts to cure. It is, therefore, an object worthy of the most serious attention of every humane practitioner. For though we cannot cure, it is our duty to smooth the bed of death, and under the most unhappy circumstances of disease to prolong life as far as lies in our power." It is important to distinguish this disease from other disorders of the bowels. Mr. Copeland has described its symptoms with great precision, and shown in what manner its nature may be detected. By this inquiry he has also marked those cases in which relief can be afforded, and those in which palliatives only can be employed; for stricture of the rectum may be either simple in its nature, or combined with some specific disease. Whatever excites inflammation in the canal, or even irritation of its membranes, may produce a contracted condition of parts, and thereby offer obstruction in the same manner as a more complicated affection. What is calculated to afford relief in one case, is but ill adapted to be of advantage in the other; indeed, it is calculated to do injury. If the contraction of the rectum be connected with any schirrous or cancerous condition, as is sometimes the case, the means which it will be advisable to employ in one state, are exceedingly improper for the other; hence the importance of deep attention to pathological appearances in these cases.

Stricture of the rectum I do not believe to be a disease of such frequency as generally supposed. Its connexion with cancer is certainly not common, although instances of its occurrence must come under the notice of all who are engaged in practice. For this, it may truly be said, we have no remedy; and it is therefore essential to ascertain what means are likely to afford ease, or check the progress of the disease. In its advanced stage I know of none equal to the injection of cold drawn linseed oil; a remedy

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I believe first employed by Sir Astley Cooper, in whose practice I have witnessed its beneficial operation.

With regard to the removal of Hæmorrhoidal Excrescences, the opinions of surgeons are very various, some preferring the ligature, others the knife. My own practice has been generally confined to the latter, not having met with any accident. I have seen serious inconveniences arise from the application of the ligature. In the memoir of the late Mr. Ware, I have noticed his judicious remarks upon these cases, and they have always influenced me in the treatment of this disease. Mr. Copeland is in favour of the ligature, preferring to apply it with caution, and at several times when a number of excrescences require to be removed. The desire to effect an immediate cure, has often occasioned a neglect of means, which, if they be not capable of entirely subduing the disease, can, at least, very materially reduce it—I mean the employment of astringent injections, which are found to be very beneficial. Mr. C. recommends also the use of a bougie, the pressure of which he has found attended with the best effect.

In his Observations on Fistula in Ano, Mr. C. confines himself to remarks upon some of those embarrassing accidents which relate to the operation itself, and some of those circumstances which he conceives to be the cause of failure in the ultimate cure. In common with every other experienced surgeon, he feels the full value of the improvements in the treatment of this disease, introduced by the celebrated Mr. Pott, to whose method, indeed, little has been added by later surgeons. When the operation has to be performed high up in the intestine, it is not unusually attended with considerable hæmorrhage. Mr. Pott singularly makes no notice of this event, which must have occurred to almost every operator. In some instances it has been of a formidable kind, though I have never seen any dangerous effect result from it. The vessel from which the bleeding proceeds, it is not easy to secure, and pledgets of lint saturated with some astringent application are the means usually employed to restrain it. Mr. Copeland thinks the presence of these irritates the bleeding vessel, and keeps up the hæmorrhage, and he prefers the exposure of the wounded part to the operation of the external air. Among the cases of failure of the ordinary operation, he enumerates the diseased conditions of the intestine itself, the occurrence of the disease in patients affected with phthisis pulmonalis, a carious state of the posterior bones of the pelvis, or lumbar vertebræ, the imperfect division of the sinus, or of any other with which the main one may have had any communication.

In the later editions of his work he treats of the consequences produced

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by the irregular, or too powerful action of the sphincter muscle, from a peculiar conformation of which he thinks the hereditary transmission of hæmorrhoids may be in some instances considered to arise, and the treatment of those cases is to be looked for in the use of the bougie. He also treats of the Prolapsus Ani and the Imperforate Anus. On the former subject he observes, that "it is so frequent a disease in several branches of the same family, that particular structure must be supposed to have some share in producing it, or predisposing to it." He recommends the application of a ligature to a portion of the mucous membrane, so that inflammation and subsequent adhesion may be produced, in which indeed the cure consists. On the latter malconformation he remarks upon its varieties, and on those cases which sometimes will admit of relief by the passing of a trochar, and means afterwards to be adopted to retain the continuity of the passage.

In 1810, Mr. Copeland also published an edition of his uncle Mr. Edward Ford's *Observations on the Disease of the Hip Joint.* This work which has long been regarded as a standard publication upon the subject of which it treats, has been most carefully revised by the editor, who has added may practical annotations. Mr. Copeland's familiarity with the views and practice of the author, eminently qualified him for the task to which he has done ample justice.

In 1815, Mr. Copeland printed *Observations on the Symptoms and Treatment of the Diseased Spine,* a second edition of which was published in 1818. This work treats more particularly of the incipient stages of the disease, the importance of detecting which will be admitted by all practitioners. In the advanced stages of the disease there is often but little to be done; in the early ones the most decided advantage, and often cure may be obtained: hence, the necessity of accurately investigating this affection. Mr. Pott's remarks on the paralysis consequent upon the advance of this disease, led the profession to entertain precise notions on this subject; Mr. C. has rendered a no less important service in enabling us to detect its early existence, before either caries or curvature has taken place. The early symptoms are to be classed as arising from a disturbance of the functions of the nerves that are dependant on the spinal marrow for their influence, occasioned by compression produced by the condition of the ligaments, or intervertebral substance, or bone composing the vertebræ. Mr. C. assigns, as a characteristic and symptom when the disease attacks the superior dorsal vertebræ, a commencing paralysis of the abdominal muscles. He says,

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"It is surprising how very early in the disease this symptom may be detected, when the attention is directed to it. It is sometimes described as an oppression of breathing, tightness of the stomach, a band tied round the belly, torpor of the abdomen, and by other expressions in different patients. It produces costiveness, retention of urine in a more advanced stage; in short, in whatever of those symptoms you examine it, some function of the abdominal muscles is recognized to be impeded. No author who has mentioned the disease, has omitted this symptom under some name or other, although it has never, I believe, been fully explained."

Again, alluding to the paralysis of the abdominal muscles, he observes,

"So early does this present itself, as a symptom of compression of the spinal marrow, that it is very generally, for some time, treated for the complaint which it appears most to resemble; I have seen it called asthma, and prescribed for as such for several months; it is often called dyspepsia, and even diseased liver, from the sense of uneasines and stricture over the region of the liver and the stomach; sometimes it is taken for a disease of the colon or rectum, from the costiveness and pain that accompany it; the bladder, also being unable to perform its office, the cause of this impediment is sought for in the urethra or kidneys."

It is sometimes difficult to ascertain the precise part of the spine affected by the disease. Mr. C. mentions a mode of assisting us to acquire this information which may, in some cases, be useful:

"A sponge wrung out of hot water, and carried down the spine will often give a very acute degree of pain, while passing over the part where disease is going on. The effect of this experiment I first discovered by accident; when I had been applying leeches to a diseased spine, the gentleman, who was my patient, complained of great pain, when the hot sponge came close to the projecting vertebræ; and on reflecting how much more sensible of the power of heat an inflamed part was, I was led to repeat the experiment in every case of diseased spine, which offered to my inspection. I have not been able to reduce the result of this experiment to any given rules; sometimes I expected a great degree of pain, and it did not occur; at other times, it took place where I least expected it. But, it requires long experience and many trials, to speak with confidence, on a subject of such considerable importance, as an early and decisive diagnosis of the disease. This, however, may be safely concluded, that although the absence of pain on this application of heat, is not an evidence that there is no disease, the feeling of acute sensation in any one part, is sufficient to mark that part as the seat of the disease. Whatever circumstance, however trifling, leads us to an accurate diagnosis of this formidable complaint, cannot be too much dwelt on, or attended to, at the only period when it is in our power to prevent the deformity, and other serious consequences, which usually are produced by the continuance of the disease."

In the treatment of the disease Mr. Copeland prefers, in the earlier stages, the application of leeches and blisters with the enjoining of abso-

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lute rest; and, in the more advanced, the employment of caustic issues. The use of these when the disease is situated at the lower part of the spine he regards as most beneficial. The rapidity or slowness with which anchylosis of the vertebræ, by which a cure of the disease takes place, is dependant upon the seat of the disease and the power of the system of the patient. In some it is, therefore, a very tedious, whilst in others it is a comparatively rapid process.

Mr. Copeland contributed a paper to the third volume of the Transactions of the Medico-Chirurgical Society, in which he gives the *History of a Case in which a Calculus was voided from a tumour in the Groin.* This extraordinary occurrence he communicated to the society as it appeared to him likely to suggest some important reflections and lead to a more careful prognosis in similar complaints. The calculus was a biliary one, and appears to have lodged in the cæcum, there producing irritation, inflammation, and subsequently abscess. This was allowed to break spontaneously and the calculus was, after some time, discovered and extracted.

There is one other subject to which in this brief memoir of Mr. Copeland, I must allude. He first suggested the removal of a portion of the *septum narium* by means of a well and ingeniously contrived pair of forceps in cases where its oblique position obstructed the passage of air through the nostril; but I am not aware that he has published any notice on this subject, although he has very successfully performed the operation.

In 1834, Mr. Copeland was elected a Fellow of the Royal Society. He is one of the Council of the Royal College of Surgeons, and upon the accession of Her Majesty was appointed a Surgeon Extraordinary to the Queen.

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William Cullen

WILLIAM CULLEN, M.D., F.R.S., L. & E.

FIRST PHYSICIAN TO HIS MAJESTY IN SCOTLAND,

&c., &c., &c.

"Death openeth the gate to good fame, and extinguisheth envy."

BACON.

THE name of Cullen is closely identified with the Edinburgh School of Medicine, and no one of its professors has exerted a greater, or perhaps, an equal influence in the establishment of its high character. His opinions and practice have been spread throughout civilized Europe, by the great number of pupils who received from him the principal part of their medical education. It is rather surprising, therefore, that the biographers of such a man should be so scanty; it has been owing, however, to the neglect of his son, Lord Cullen, who himself having in view to write the life of his father, prevented others from entering upon it, and he died before he had executed the duty he had proposed to himself. Dr. John Thomson, the distinguished Professor of Medicine and General Pathology in the University of Edinburgh, has, since the death of Lord Cullen, been put in possession of his papers, and in 1832 he printed the first volume of the Life of the great teacher. The manner in which this is executed, the extent of knowledge of medical science which it displays, and the unquestionable competency of the biographer, renders it a matter of great regret that the work should, at this distant time, remain in an unfinished state.

WILLIAM CULLEN was born at Hamilton, April 15, 1712. His father was an attorney and factor to the Duke of Hamilton. He was one of nine children, and received the rudiments of his education at the grammar school of his native place, where he is reported to have distinguished himself by the liveliness of his manner, by an uncommon quickness of apprehension,

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and by a most retentive memory—qualities which he continued to possess, in an eminent degree, to the latest period of his life. Having acquired the previous necessary knowledge, he went to the University of Glasgow, where, among other lectures, he attended those of Dr. Simson, on Mathematics, in 1727. He was apprenticed to Mr. Paisley, a surgeon in Glasgow, a gentleman of studious habits, possessed of a good practice, and having an extensive library. In 1729 he went to London to obtain further knowledge of his profession, and he was afterwards, upon the interest of Commissioner Cleland (Will Honeycomb of the Spectator), appointed surgeon to a merchant ship, trading to the settlements in the West Indies, of which Mr. Cleland, of Auchinlee, his relation, was the captain. In the course of this voyage, the only one he made, he directed his attention to the general effects of diversity of climate on the human constitution, and to observing those diseases which particularly distinguish the West Indies. He used to make frequent allusions to tropical diseases in the lectures he afterwards delivered. He returned to London, was in the employ of Mr. Murray, an apothecary in Henrietta Street, manifested great diligence, and turned his attention especially to the Materia Medica. His father, and his elder brother, being dead, he was obliged to return to Scotland in 1731 or 32, to arrange for the education of his brothers and sisters. Captain Cleland engaged him to reside at Shotts, and take the care of his son, who was an invalid. Here he practised medicine for nearly two years, when, being desirous of further mental improvement, he went to live with a clergyman in Northumberland to gain information in general literature and philosophy.

The winters of 1734-5 and 1735-6 were occupied in attendance upon the medical classes of Edinburgh, where regular lectures, upon an extended plan, had been lately established by Drs. Monro, Rutherford, Sinclair, Plummer, and Alston. The zeal of the teachers inspired the pupils with a strong desire of improvement, and they formed a medical society to meet weekly, to read and discuss essays on the subjects of their studies. Cullen was one of the members of this body, and thus became associated with Dr. George Cleghorn, and others, of considerable talents and merit, who obtained distinction in after life. This formed the commencement of the Royal Medical Society, which still continues to flourish, and in which a very large proportion of the men most remarkable for medical knowledge in the present day, have often exercised their talents, and trained themselves for professional disputation.

In 1736 Cullen commenced practice as a surgeon in Hamilton, and was in attendance on the Duke of Hamilton and his family, as well as upon other

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influential persons in the neighbourhood. He was very successful in his treatment of the Duke in an alarming attack of disease. Dr. John Clerk, of Edinburgh, was sent for, and he highly approved of Cullen's skill. This circumstance tended greatly to advance his medical character, and he was ever grateful for the liberality evinced by Dr. Clerk on this occasion, and upon his decease, in 1757, he made a public oration in praise of him in the hall of the Royal Infirmary, which is said to have been the first of the kind delivered in Edinburgh.* At Hamilton, Cullen became acquainted with William Hunter. Their dispositions were congenial, their studies of the same character, and their friendship for each other of the most lively description. They contemplated an union in practice, which however did not take place, Hunter preferring to remain in London, where he pursued the most brilliant career.

In 1740 Cullen took the degree of M.D. at Glasgow. He must have been held in much respect prior to this time, as it appears that he was elected a magistrate in 1738, and again in 1739. The riots of this time, from the high price of grain, induced Cullen to turn his attention to agricultural subjects, and he took an active part in the introduction of several improvements into the west of Scotland. In 1741 he united his fortune to that of an amiable lady, the daughter of the Rev. Mr. Johnstone, of Kilburchan, with whom he lived most happily for forty-six years, and by whom he had a family of eleven children. In 1744 he removed to Glasgow, and commenced as a lecturer in medicine; and in 1746 he made arrangements with Dr. Johnstone, to deliver a course of lectures on the Theory and Practice of Physic, in the University. Besides these, he gave lectures on Materia Medica, and Botany, with Mr. Carrick. He also delivered lectures on Chemistry with the same gentleman, which were much more fully attended than the other courses, as many, not of the medical profession, attended them.

* Dr. Clerk began the profession as an apothecary, and rose to its highest grade. By this course, Dr. Cullen conceived he acquired an accurate knowledge that is sometimes neglected by the student, but the want of which is always deeply regretted by the practitioner. He sagaciously observes, that "however great the fame of a practitioner of physic is, we may always suspect the foundation of it, unless we know him to be possessed of that learning and knowledge which is the only sure foundation of medical skill." Dr. Clerk, he tells us, was the person who chiefly introduced into Scotland judgment, accuracy, and elegance in private prescription; and by this talent he was selected to direct the formation and arrangement of the Edinburgh Pharmacopœia, and also that of the Royal Infirmary. Of this institution he was one of the original promoters, and he befriended it in every way in his power, and mainly contributed to its success.

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From a letter of Dr. Wallace it is shown that his opinions on the Theory of Fever, the Humoral Pathology, and the Nervous System, were the same at this time as afterwards appeared in his writings. He was much liked by the pupils; and upon the resignation of Dr. Johnstone, he was made the Professor of Medicine in the University. He was at this time esteemed the first physician in Glasgow. He displayed an originality in his views, and was bold in rejecting the institutions and aphorisms of Boerhaave, which generally formed the text-book of lectures on Medicine. Cullen had not, at this time, composed any text-book, as was usual with other lecturers. He felt that he should be much more competent to the task after he had been some further time engaged in teaching; and he appears to have kept steadily this object in his view, and ultimately produced his celebrated "First Lines," which still ranks as an authority and an important work in medicine. Cullen's disregard of the doctrine of Boerhaave, occasioned him to be called "a Paracelsus, a Van Helmont, a whimsical innovator;" and great efforts were made, publicly and privately, to disparage him and his opinions. He was even requested by the Lord Provost Drummond, to speak respectfully of the celebrated Leyden Professor, and to avoid differing with him. Cullen did not entertain any disrespect for Boerhaave, or slightly esteem his knowledge; on the contrary, he says, in one of his Introductory Lectures, "I truly esteem Dr. Boerhaave as a philosopher, a physician, and the author of a system more perfect than any thing that had gone before, and as perfect as the state of science in his time would permit of."

Dr. Cullen's style of lecturing was easy and familiar, and delivered from short notes. He was looked upon by some, as a heinous innovator, as he abandoned the delivery of his lectures in the Latin language; and from this circumstance, some attempts were made to detract from his reputation, and to lay to his charge an imperfect acquaintance with the Latin tongue. Dr. Thomson states that many Latin notes in his hand-writing are among his papers, and that his lectures on Botany were delivered in Latin. His lectures delivered *viva voce*, were remarkable for their vigour, their vivacity, and their variety. His hearers were equally captivated with the manner in which they were given, their artless execution, and the valuable matter of which they were composed. His character for liberality towards the students has been recorded by many of his pupils. No man ever took greater pride in the progress of an emulous student. Dr. Cullen did much towards increasing the reputation of the University of Glasgow. He not only introduced his own method of teaching medicine; but in Botany, he adopted the system of Linnæus, as given in the outlines in the "Systema Naturæ,"

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published at Leyden, in 1735. How eminently qualified he was to teach, will be apparent from the following passage, which occurs in an introductory address to his chemical class:

"After teaching for so many years, it might be supposed that my plan was exactly fixed and sufficiently known; but truly I am yet far from being satisfied with the perfection of my plan, and very certain that it is neither so complete, nor so exactly suited to your purpose, as I could wish. It will, therefore, be a long time yet—I hope, at least, it will be long; for it will only be when the languor and debility of age shall restrain me—that I shall cease to make some corrections of my plan, or some additions to my course."

Dr. Thomson thinks him the first to have employed diagrams to illustrate the subject of double elective attractions. By these, and the use of algebraical characters, to represent the relative forces of attraction between the principles both of the original, and of the resulting compounds, he was enabled to explain, with greater facility and clearness than had previously been done, the cases in which a mutual decomposition, and new combination, of compound bodies can be effected. The late professor Robison, in a memoir of Dr. Joseph Black, one of Cullen's most distinguished pupils, says, that in Chemistry, Dr. Cullen saw "a vast department of the science of nature, which must be founded on principles as immutable as the laws of mechanism, and which may be one day formed into a great system of doctrines of various degrees of subordination and dependence. He was determined to attempt this mighty task, and promised himself great reputation by its accomplishment. Nor was he altogether disappointed. He quickly succeeded in taking chemistry out of the hands of the artists, the metallurgists, and pharmaceutists, and exhibited it as a liberal science, the study of a gentleman." Cullen directed his attention to the generation of heat and cold by mixture, and threw great light upon the subject. Other chemical subjects formed topics of enquiry, and their particular nature is ably put forth by Dr. Thomson, in his Life of Cullen. To his success in chemical science, must be attributed the respect and friendship he obtained of several eminent persons. He maintained a correspondence on agricultural matters with Lord Kames, and contemplated a work on agriculture, a part of which in MS. is still in existence. He transmitted to the Board of Trustees, for the encouragement of Fisheries, Arts, and Manufactures, in Scotland, an Essay on Bleaching, for which he was presented with "three suits of table linen." These researches did not abate his ardour in the pursuit of medical enquiry, for he projected an edition of the works of Sydenham, and a translation of the Commentaries of Van Swieten on the

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Aphorisms of Boerhaave; but those objects were abandoned, apparently from want of leisure, occasioned by the increase of his private practice. He also contemplated the publication of an Elementary work on Chemistry, and in 1753, transmitted to the Edinburgh Philosophical Society, a paper on some reflections on the Study of Chemistry, and an Essay towards ascertaining the different species of salts, being part of a letter addressed to Dr. John Clerk, &c. His design, however, was never accomplished.

The practice of Dr. Cullen, at Glasgow, and its neighbourhood, was extensive, but not lucrative, and interfered greatly with his researches. He determined, therefore, to quit Glasgow and remove to Edinburgh. An opportunity of doing this, soon offered itself. Dr. Plummer was attacked with apoplexy, and Cullen stood candidate for the Chemical Chair which he had occupied, and succeeded in obtaining it, in 1755; but as the appointment had been made principally through the interest of the Duke of Argyll, by the Town Council, and not by the College, the Medical Professors were incensed, and protested against his admission into the University. He, however, commenced teaching in January, 1756, and soon after matters were amicably adjusted. Cullen held the chemical chair during a period of ten years. The first course of lectures was attended by 17 pupils only; the second, by 59; and the greatest number amounted to 145, in any one session. Some extracts from these lectures have been printed, by Dr. Thomson, and will be read with interest.

Dr. Cullen commenced as a lecturer on Clinical Medicine, in the Royal Infirmary of Edinburgh, in which he was joined by his colleagues, Drs. Whytt and Monro. This course, which was originally begun by Dr. Rutherford, laid the foundation of much of the eminence of the Edinburgh Medical School. Dr. Cullen was thus engaged during eighteen years. The following extract, from one of his note books exhibits an admirable specimen of his candour:—

"It is not improperly said that the earth hides the faults of the physician. If every patient that dies were opened, as ours has been, it would but too often discover the frivolity of our conjectures and practice. In these lectures, however, I hazard my credit for your instruction, my first views—my conjectures—my projects—my trials—in short, my thoughts—which I may correct, and if necessary change; and whenever you yourselves, shall be above mistakes, or can find any body else who is, I shall allow you to rate me as a very inferior person. In the mean time, I think I am no more liable to mistakes than my neighbours, and, therefore, I shall go on in telling you of them, when they occur. With regard to the present case, I might go back to consider the symptoms, and from them, endeavour to account for my own ignorance; but I choose rather to acknowledge my mistakes, and to consider the case on the footing which we have now learned from dissection."

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Dr. Cullen's reputation as a teacher of clinical medicine, secured for him the appointment to the chair of the Institutes, or Theory of Physic, upon the death of Dr. Whytt, in 1766: and it was conferred on him at the request of the professors Monro, sen. and jun., Hope, and Young, and by an address proceeding from 160 students in his favour. In medicine, he abandoned the doctrines of Boerhaave, and embraced those of Hoffman, upon whose opinions as a basis he erected his own system. Dr. Cullen's chief attention in his medical researches seems to have been directed to the Functions of the Nervous System. He remarked the difference between the nerves of sensation and the nerves of motion. In a clinical lecture, delivered in 1765-6, he says, "it is surprising that, when the nerves that go off together from the sensorium, are the cause of both sensation and motion in a muscle, yet, the one should be destroyed, and the other remain entire; this affords a proof that these nerves are distinct, even in the sensorium." He rejected Hartley's doctrine of vibrations, and referred the operations of the nerves to the agency of a nervous fluid, though by this, he says he means nothing more than that there is "a condition of the nerves which fits them for the communication of motion." Dr. Thomson has taken an extended view of Cullen's opinions and speculations on the nervous system, and it is therefore unnecessary for me to pursue the subject further, than by stating that it is comprehended under the following heads:—

"1st, Of the Nervous System considered as the connecting medium between the soul and body, or the Immaterial and the Material parts of Man; 2nd, Of the Nervous System considered as the organ of Sensation; 3d, As the organ of our Intellectual operations, Memory and Judgment; 4th, As the organ of the Voluntary, Involuntary, Mixed, and Sympathetic Motions of the animal economy; 5th, Of the different conditions of the Nervous System in the states of Sleeping and Waking, and the doctrine of Excitement and Collapse; 6th, and lastly, The effects of Custom upon our Corporeal and Mental Functions."

I refer the reader to Dr. Thomson's work for a separate consideration of these important divisions. Dr. Cullen's opinions on the Nervous System were published by his pupil, Dr. De la Roche, of Geneva, under the title of *Analyse des Fonctions du Système Nerveux.* These have been referred to by Professor Reil, and a merit assigned to De la Roche, which properly belongs to his master. Upon his physiological opinions he based his medical practice. He says

"The study of physiology, even considered as a piece of pure speculation, with regard

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to the vital mechanism or organization of animal bodies, must be acknowledged to be a curious and interesting subject; but, when considered as capable of a very useful application, it becomes a subject of the greatest importance. This application is to explain the nature of the diseases of the human economy, and the operation of remedies upon it, and thereby to lead to a more certain means of curing diseases, than we could otherwise attain; and the soundness and value of physiology is only to be ascertained by its being capable of this application."

The important part assigned by Cullen to the Nervous System, in the production and modification of the phenomena of diseases, and the effects produced by external agents, formed the great outline of his theory of Excitement and Collapse, as dependant upon the Animal Power or Energy of the Brain. Dr. Cullen has been regarded by some rather as a teacher of speculative than practical medicine. Dr. Thomson justly repudiates this, and contends that no teacher of practical medicine was ever at more pains than Dr. Cullen to distinguish between well ascertained matters-of-fact, and the assumptions and conclusions of hypothetical reasoning. In leading his students to reflect and to reason, he says, "it was his constant endeavour to teach them to observe the course of nature in diseases, to discriminate between their uniform and essential symptoms, and their merely accidental combinations, and to ascertain, as far as is possible by observation and analytical reasoning, the respective influence of the remedies employed by art, and of the operations of nature in the cure of diseases."

In 1761 Dr. Alston, the Professor of Materia Medica, died, and Cullen, upon the petition of the students, supplied his place. Manuscript copies of his lectures, on this branch of medical science, were circulated; and at length an incorrect edition was published in London, and translated into several languages, and re-published even in Dublin and Edinburgh. Cullen was obliged to apply to the Court of Chancery to restrain the publication. He obtained an injunction in 1771, and in 1773 an edition with corrections, by his consent, was published. The edition, however, of which he must be considered the author, is that published at Edinburgh, in 1789, in two vols., 4to., entitled *A Treatise of the Materia Medica.* Of this work it is hardly necessary now to give an account—its use has been superseded by later productions. The great improvements in chemical science have necessarily introduced many changes into the Materia Medica. Cullen did not aim at giving a full account of all that might be said of the several subjects of the Materia Medica; his object was to give the principles upon which these substances are to be judged of as medicines. He admits that in the composition and language of this work, there are many faults and imperfections; and he pleads, in excuse, that the finishing of this work was ne-

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cessarily delayed till a very advanced period of life, the seventy-seventh year of his age. There have not been wanting malicious critics to infer, and to reproach the author with, a decay of faculty—the work has been said to be wanting in the beauties that characterized his earlier works. His energy of mind, after a life of such extraordinary labour and application, might well be expected to suffer some sensible decline—he might not verify the picture so beautifully drawn by Cowley, in the following lines—

"Nor can the snow which now cold age does shed
Upon thy reverend head,
Quench or allay the noble fires within;
But all which thou hast been,
And all that youth can be, thou'rt yet:
So fully still dost thou
Enjoy the manhood and the bloom of wit,
And all the natural heat, but not the fever too.
So contraries on Ætna's top conspire:
Th' embolden'd snow next to the flame does sleep.
To things immortal time can do no wrong;
And that which never is to die, for ever must be young."

And, I would say of Cullen, as Fuller did of Ben Jonson, when a like accusation was brought against him, that "if his latter be not so spriteful and vigorous as his first pieces, all that are old will, and all who desire to be old should, excuse him therein."

When Dr. Cullen was elected Professor of the Institutes of Medicine, he resigned the Chemical chair, which was most worthily assigned to the illustrious Black. From 1768 the Theoretical and Practical Chairs were united; and Drs. Cullen and Gregory lectured alternately on these subjects. In 1773 Dr. Gregory died, and Cullen became the sole Professor.

Cullen's *First Lines of the Practice of Physic*, was first published at Edinburgh, in 1777, in four vols., 8vo. Many editions, in various languages, have appeared, and accompanied by the commentaries of various writers. The modesty of the preface is remarkable. Notwithstanding the author had been engaged in teaching for no less a period than forty years, he yet felt diffidence in producing his work. Prior to the publication of it, Dr. Cullen had printed *Institutions of Medicine*, being a physiological text-book for the use of the students; the first edition appeared in 1772, and was succeeded by several others. In 1774 he printed *A Letter to Lord Cathcart, concerning the Recovery of Persons Drowned and Seemingly Dead*, which was re-printed three or four times. In the second volume of

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Essays and Observations, Physical and Literary, published at Edinburgh, in 1756, Dr. Cullen has a paper *Of the Cold produced by Evaporating Fluids, and of some other means of Producing Cold.* This was also printed along with Dr. Black's *Experiments upon Magnesia Alba, Quick Lime, and other Alcaline Substances*, and was written when he was Professor of Medicine in the University of Glasgow. His work on Nosology, one of the most popular performances of Cullen, appeared first in 1769, and has gone through many editions. The edition of 1785 is the last with the author's corrections. Its title sufficiently denotes its object and contents: *Synopsis Nosologiæ Methodicæ, exhibens clariss. Virorum Sauvagesii, Linnæi, Vogelii, Sagari, et Macbridii Systemata Nosologica: edidit, suumque proprium Systema Nosologicum adjecit Guil. Cullen, &c.* Many abridgments of thiswork have been printed. His *Clinical Lectures delivered in the years* 1765-66 were also printed in 1797, and again by Dr. Thomson in 1814.

These constitute the printed works of Dr. Cullen. He was as anxious to maintain the dignity of the profession, as he was to advance its improvements. He was very desirous to prohibit the conferring of a degree on any one who had not gone through the regular course of study. He drew up a memorial upon the subject, which, at the desire of the Duke of Buccleugh, was submitted to the consideration of Dr. Adam Smith, who had travelled with his grace, had paid much attention to the subject of education, and had endeavoured to apply the principles inculcated in regard to trade and commerce in his work on the "Wealth of Nations." The doctor's answer is lively and ingenious, and he endeavours to palliate some of the practices complained of. The duke was unwilling to enlist the government in the affair, and the Scotch universities were left to remedy the abuses of their own institutions.

Dr. Cullen is a remarkable instance of the success attending great intellectual activity. His birth was, though respectable, yet at best but humble, and the eminence he reached was in a department in which there were many distinguished competitors. The equanimity of his temper qualified him for the exercise of his profession, and particularly for submission to the drudgery of teaching. This appears to have been his *forte*:—his patience was inexhaustible, and his readiness to assist all who were ambitious of acquiring information seems to have kept pace with the degree of emulation possessed by the student. His conduct towards his pupils much endeared him to them. Dr. Aikin, one of these, says, "He was cordially attentive to all their interests; admitted them freely to his house; conversed with them on the most familiar terms; solved their doubts and

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difficulties; gave them the use of his library; and, in every respect, treated them with the affection of a friend and the regard of a parent. It is impossible for those who personally knew him in this relation, ever to forget the ardour of attachment which he inspired." Many other pupils have borne ample testimony to his extraordinary zeal, assiduity, and kindness. He was not distinguished by any remarkable genius, nor was he checked in his course by the restraints which a higher classical education might probably have imposed upon him. He had, however, a genius for observation, and above all a great regard for truth—qualities highly important in the character of a physician, and leading to the very best purposes. The imagination was not permitted to interfere with the sober dictates of the judgment, and no man can be said to have ever attained a higher position in the medical world in modern times than did Dr. William Cullen. The vigour of his mind, and the energy of his character, chastened by high moral qualities, and regulated by the most amiable temper, manifest themselves throughout the whole of his career, from his commencement as a lecturer at Glasgow, to the obtaining of the highest professional dignity at the University of Edinburgh. No other man has ever been able to number among his pupils so many distinguished characters.

Cullen's mind has been designated as "essentially philosophic." Acute in observation, he had also the power of arranging and generalizing his facts:—they were always made subsidiary to a grand purpose—his chief aim and object—the elucidation of disease. All his physiological researches tend to this end, and nothing can exceed the patience of his investigation, or the accuracy of his observations—his philosophy was preeminently *inductive*.

There are two portraits of Cullen. One was painted by Cochrane at the request of the students, and engraved by Valentine Green; though of this engraving Dr. Thomson appears to be ignorant. The other was painted by Martin, in 1777, for the Medical Society, and engraved by Beugo. From this picture, representing him as in the delivery of a lecture, the portrait accompanying this memoir has been taken. In his person he is described as being, tall and stooping much—his countenance expressive—his eye keen and lively. His titles may be thus enumerated:—Professor of the practice of physic in the University of Edinburgh; first physician to his Majesty for Scotland; fellow of the Royal College of Physicians of Edinburgh; of the Royal Societies of London and of Edinburgh; of the Royal Society of Medicine of Paris; of the Royal College of Physicians of Madrid; of the American Philosophical Society of Philadelphia; of the Medical Society of Copenhagen; of the Medical Society of Dublin;

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of the Royal Medical, and of the Royal Physico-medical, Societies of Edinburgh.

Dr. Cullen retained the professorship of medicine until 1789, when he resigned the chair, and Dr. James Gregory was appointed his successor. The lord provost, magistrates, and town council of Edinburgh, presented him, in the name of the community, with an elegant piece of plate, on which was the following inscription :—

GULIELMO CULLEN, M.D.
Medico Regio apud Scotos Primario,
Plurimisque aliis Titulis claro,
Multiplicis Disciplinæ Medicæ
Professori Meritissimo,
Per totam terrarum orbem celeberrimo,
Scholæ Medicæ in Academia Edinburgensi
Per Annos XXXIII. Decori et Columni,
Hanc Pateram,
Ut suæ erga illum jam emeritum existimationis
Aliquid superesset Monumenti,
Civitas Edinburgena Grata
Donavit. M.DCC.XC.

A general meeting of the pupils was also held in the hall of the Medical Society, and it was unanimously resolved to enter into a subscription for erecting some permanent monument of grateful respect to his memory in the New College. It consisted of a marble bust, executed by Gowans. Addresses were presented to him from the Senatus Academicus of the university, from the Royal Medical Society, the Royal Physical Society, the American Physical Society, &c.

He died February 5, 1790, in the seventy-eighth year of his age. The Annual Register for 1790 asserts, that he did not leave property sufficient to support his daughters, and that this was supposed to have been occasioned by some mistaken notions he entertained on the subject of farming.

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GALEN.

G. MRONGHE ANEIS IN GRAECIAE MEDICINE

PRINCE

WHITTAKER & Co AVE MARIA LANE, 1840.

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GALEN.

"Ut transeundi spes non sit, magna tamen est dignitas subsequendi."

QUINTILIAN.

IT has been urged by many, that an irresistible attachment to the works of the ancients has greatly retarded the progress of medical science. There is great reason to question the truth of this assertion, as attachment does not necessarily imply a blind adherence to these authorities. Disease was coeval with mankind, pain and sickness demanded assistance, facts were observed and experience obtained, when the spirit for theorizing was unknown; and considerable information may be gathered, by a judicious observer, from an acquaintance with the practice of comparatively rude and uncivilized periods. Until the time of Hippocrates, the *Father of Medicine*, no regular or accurate histories of diseases can be said to have had existence—the laws of the animal frame were unknown, for its structure was not permitted to be examined. This great physician dispelled the mist with which the science was obscured, and has left to posterity a legacy of exceeding value, beneficial to all who shall engage in the study of medicine. His most celebrated commentator is scarcely less entitled to praise. Galen, equally with Hippocrates, studied medicine upon just principles, and extended his knowledge by an accumulation of facts derived from the careful observation of nature. A blind observance of the opinions of these great men and their successors, however, led to great evils—the human mind became trammelled, and the physicians of former days confined themselves to commentaries on the works of their predecessors, and acknowledged nothing as true, but as in accordance with the opinions of their ancient masters.

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GALEN.

Claudius Galen was born in the year 131, of the Christian era, at Pergamus, a city renowned for its manufacture of parchment (whence its name, *pergamena,)* in Asia Minor, in the 15th year of the reign of the Emperor Adrian. He was the son of Nicon, an able and wealthy architect, who was endowed with great knowledge of philosophy, astronomy, geometry, &c., and who gave to his son the most ample education. Of his mother, Galen gives no very interesting account: she was a perfect Xantippe. Having made himself acquainted with the philosophy of the schools under the direction of the ablest masters, and become familiar with the doctrines of the Stoics, the Academics, the Peripatetics, and the Epicureans, he applied himself to medicine, and with so great success as to have left an imperishable name. It is said that Galen was called to physic by a dream his father had. His studies were completed at the age of eighteen, and before he was twenty-one he had composed some medical works. His medical education is reported to have been derived principally from the tuition of Ælianus Meccius, Numesianus, Stratonicus, Satyrus, Pelops, Phasianus, Heraclianus, and Æschrion. Powerful as the assistance of such teachers may have been, still it could not have supplied the place of observation; and to Galen's devotion to the writings and practice of Hippocrates must be attributed his future excellence. To improve himself in his profession, he travelled to converse with, and to witness the practice of, the physicians of other countries, and make himself familiar with their natural productions, climate, &c. Galen lost his father when he was twenty-two years of age; and he shortly withdrew to Smyrna and Corinth, to attend the lectures of the celebrated physicians and philosophers of those places.

At the time in which Galen lived, the school of Alexandria had the greatest eminence. Here he paid great attention to the arts and sciences, and devoted himself in particular to anatomy. He afterwards passed into Cilicia, Palestine, Italy, Thrace, Macedon, Crete, Cyprus, &c. He visited Lemnos to examine its celebrated earth, and he travelled into Syria to inspect the renowned Balsam. His journeys are described as having been made on foot, like a true peripatetic philosopher—not to save expense, for he was not needy, but to have a better opportunity of making observations.

He returned to Alexandria in his 28th year, by which time he had acquired considerable medical and surgical skill, and was celebrated for the cure of wounds. Having taken up his residence at Pergamus, the Pontiff placed the gladiators under his care; and in the treatment of the injuries they received he was most successful. His fame increased, but seditious disturbances occurring, he was compelled to quit his native city. In his 32nd year he removed to Rome, intending to settle there. In this object

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however, he was frustrated; for he excited too much jealousy among the physicians of that city, who undermined him, and compelled him to quit after a few years residence. His enemies taunted him with being a grammarian, a reasoner (λογιατρος), as one having theory and not practice; and when no other means of reproach were left, they accused him of a familiarity with magic.

When Galen arrived in Rome, the physicians, it must be remarked, were much divided into sects:—dogmatists, empirics, methodists, episynthetics, pneumatists, and eclectics. He attempted to lead them back to the observation of nature—to re-establish the doctrine of Hippocrates. He had, during his residence in Rome, acquired the friendship of many distinguished persons; among others, of Eudemus, a celebrated peripatetic philosopher, whom he cured of a dangerous fever—Sergius Paulus, prætor of Rome—Barbarus, uncle to the Emperor Lucius—and Severus, their consul, and afterwards Emperor. But, above all, he was esteemed by Boethus, a consul, for the recovery of whose wife he received 400 pieces of gold. In the presence of this person he made some dissections, and exhibited the organs of respiration and the voice. He quitted Rome after five years residence; partly, it would appear, from the persecution he experienced, and partly, according to his own account, by the appearance of the plague, and returned to his native city. His fame caused the emperors, Marcus Aurelius and Lucius Verus, to send for him from Aquileia; but the plague breaking out with great fury, the emperors were obliged to remove with a small retinue. Lucius died of an attack of hæmorrhage on the road, but his body was conveyed to Rome, and Galen arrived there soon after. Marcus Aurelius wished him to accompany him into Germany, but the physician ingeniously excused himself by asserting his great devotion to the god Æsculapius, by whose favour he had been cured of a mortal imposthume, and by whom he alleged he had been advertised in a dream never to leave Rome again. Although he thus escaped the journey with the emperor, he could not avert the persecution of his professional brethren, which appears to have been of so severe a nature that he was apprehensive of the safety of his person. He, therefore, retired to a country house inhabited by Commodus, the son of the emperor, whose health during his studies under Pitholaus, and during the absence of his father, was intrusted to Galen. The prince was attacked with a severe fever, and restored. The superiority of Galen over the physicians of his time, is evident from the exclamation of the princess Faustina on this occasion: "Galen (says she) shows his skill by the effects of it, while other physicians give us nothing but words."

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He was no less fortunate in his treatment of Sextus, another son of the emperor, and afterwards of the emperor himself, who was suffering from the effects of repletion, and not attacked with ague as his other physicians had predicted. Galen's successful discovery of the royal indigestion stamped his fame. The emperor declared, "we have but one physician: Galen is the only man of the faculty." Rome was his residence for the remainder of his life. His health in his youth had not been good, and it imposed on him the necessity of closely attending to his regimen: He died in the year 201, in his 70th year. There is, however, much discrepancy among writers as to the time and place of the death of Galen. Some affirm that he returned to his native city at the age of 80, and died there; others that he died at Palestine; and Cælius Rhodiginus states that he survived to the extraordinary age of 140 years. Nothing like proof is given for any of these assertions, and Suidas says he lived 70 years.

The works of Galen are very numerous; many have been preserved, but a great number have been lost, particularly at the fire of the temple of Peace, at Rome, where his MSS. were deposited. He wrote not only on medical subjects, but also on philosophy, grammar and geometry. There is a great variety in the style of the works ascribed to him, which would lead to a suspicion that many may be spurious. That is a point which cannot now be ascertained. Those which remain to us, with evidence of their genuine character, are to be regarded as treasures of medical knowledge, often astonishing us by the sagacity they display, no less than by the familiarity of expression which frequently distinguishes them.

Galen was familiar with all the dialects of the Greek language, and therefore able better to avail himself of information in every country through which he travelled. In his writings, however, he employs the Attic, yet he disdains not occasionally to use the Latin, the Ethiopic, and the Persic, in which he was well versed. There are numerous editions of the works of Galen in Greek and in Latin. Many consist of his entire known writings, others of separate pieces. Of the former, the *first* is a truly beautiful work from the press of Aldus, and has been admitted into the collection of the classics as an *Editio Princeps*. It was printed at Venice, in 1525, in 5 vols. folio. I have seen copies of this splendid work on large paper. Frobenius, of Basle, also printed several editions of the works of Galen; the Juntas of Venice likewise; all those editions are carefully executed: but the best edition of the entire works, in Greek and in Latin, is that by Réné Chartier, published at Paris in 1679, in 13 vols. folio, including the works of Hippocrates. In the title-page of this work, Galen is

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mentioned as ARCHIATER. It is true he was physician to the Emperor, which entitles him to such a distinction; though, according to Le Clerc and other authorities, the designation was not known in his day.

Of the value of Galen's works, the best evidence that can be offered is, that no work on medicine of any magnitude, nor scarcely a treatise of value on any disease, has appeared without a reference to his opinions. All the ancient medical writers, posterior to Galen, quote largely from him, and express their veneration for his talents: Eusebius, Oribasius, Ætius, Paulus Ægineta, Alexander of Tralles, Avicenna, Averhöes, &c. No higher commendation need be sought. His writings are particularly remarkable for the attention they give to anatomy. He almost stands alone for his knowledge of anatomy among the ancients. He is exceedingly eloquent upon this subject, confidently asserting its importance as the foundation of all useful medical knowledge; and he compares the physician without anatomical knowledge to an architect who attempts to erect a building without an order or a plan. Vesalius contended that he had derived his anatomy from the dissection of brutes; but it is evident that in many respects his knowledge was obtained from the body of man himself. The severity of the Roman laws against those who should touch or mutilate the bodies of the dead was great. Galen, therefore, it is said, could not have enjoyed many opportunities of dissecting human beings. With the osteological part of the frame he might become acquainted without the aid of dissection; and he appears not to have neglected this means of acquiring anatomical knowledge. At Alexandria, he saw two human skeletons.

The dissections of Galen were, however, principally of the bodies of apes, so nearly allied in their conformation to that of man; and he urged his pupils to select those animals for examination. He had, notwithstanding, opportunities of human dissection in the instances of the bodies of children exposed by their unnatural parents—in the bodies of the slain enemies of the Romans—and in the slaves. Those opportunities, however, were not frequent; and he therefore particularly alludes to the similarity of the human species to that of the ape; and he recommends a dissection of them in preference to all other animals, and an enquiry into their structure. Many of his anatomical works have not descended to us; but there are nine books, *De Anatomicis Administrationibus;* and his excellent work *De usu Partium*, in seventeen books, where occurs the fine passage, often but not too frequently quoted, as a pagan's recognition of the power of an Almighty Architect:—

"In writing these books, I compose a true and real hymn to that awful Being who made us all: and, in my opinion, true religion consists not so much in costly sacrifices and fragrant perfumes offered upon his altars, as in

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a thorough conviction impressed upon our own minds, and an endeavour to produce a similar impression upon the minds of others, of his unerring wisdom, his resistless power, and his all-diffusive goodness. For, his having arranged every thing in that order and disposition which are best calculated for its preservation and continuation, and his having condescended to distribute his favors to all his works, is a manifest proof of his goodness, which calls loudly for our hymns and praises. His having found the means necessary for the establishment and preservation of this beautiful order and disposition, is as incontestable a proof of his wisdom, as his having done whatever he pleased is of his omnipotence."

Galen has been accused of inordinate vanity, and his works afford numerous examples to warrant such an accusation. He appears indeed to have been but little scrupulous in reciting his own cures and vaunting his own praise. But, we must not forget that he was a persecuted man by his contemporaries; that they were jealous of his fame, and took every opportunity to decry his merits; that he was, therefore, under the necessity of adopting every means—of employing all logical subtlety to refute the doctrines of his opponents, and that he laboured to re-establish the principles and practice of Hippocrates in opposition to the methodic sect, which mostly flourished in his time.

That department of medical science which is now well known by the appropriate term Hygiène, received from Galen particular consideration. He wrote commentaries on the writings of Hippocrates, upon what have been singularly denominated the non-naturals—air, food, motion, sleep, excretions, and passions—which are so essential to the preservation of life and the maintenance of health.

Galen's doctrines being founded on an observation of nature have much simplicity. He holds the end and object of medical science to be to preserve the parts of which the body is composed in a natural state, and to endeavour to establish their functions when disordered; hence, he deduces the necessity of a knowledge of anatomy. The parts of the body he considers as simple or compound, similar or organic; having for their elements fire, water, air, and earth, of which the qualities are heat, cold, moisture and dryness. According to the predominance of any one of these qualities over the other is determined the condition of the body; while they are balanced, health is maintained—when they are disturbed, disease results. Health, therefore, consists in the just proportion of the four elements. When he comes, however, to explain the origin of sickness, as produced by any defect of the elements, or improper admixture of them, he is under the necessity of calculating the varieties of temperament as dependant upon the qualities and

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combinations: hence he is led to exercise his imagination; to depart from nature, and indulge in sophistical conjecture. His remedies are directed by the same consideration: when a part naturally hot becomes cold, means must be taken to restore that which is lost, and *vice versa*. He admits, with Hippocrates, four humours: blood, phlegm, yellow and black bile; these correspond to the four temperaments. He speaks of three kinds of spirits; natural, vital, and animal, corresponding to the same number of faculties and of functions. The natural spirit he appropriates to the liver in particular, for the generation, growth, and nutrition of the body; the vital to the heart, for the elaboration and communication of heat; and the animal to the head, whence proceeds sensation and motion. But he denies not to particular organs particular faculties, and looks upon nature as the prime mover of all, and the physician as the minister of nature. Hence, he is compelled to seek an occult cause, and to acknowledge a power, *vis medicatrix naturæ*, for the service of special functions or duties. By the aid of the four humours, and the four elementary faculties, he attempts to explain the nature and origin of all diseases, and also the qualities of all substances employed as medicines.

Galen, as a practitioner, was distinguished by the perfection of his diagnosis and prognosis: to the latter he especially bent his attention, and often boasted of its accuracy. His medical sagacity must have been very great, as is seen by his work, *De locis affectis*, in which the most minute regard is paid to the symptoms characteristic of different diseases. He studied accurately the state of the pulse, and makes distinctions too minute and subtle for purposes of practical utility. His attention to sphygmica led him to observe, with great precision, the reciprocal actions of the heart, and to these he first gave the names of systole and diastole (contraction and dilation), terms preserved to the present time.

Galen practised surgery in the early part of his career, but not in later times. His writings speak of tumours, wounds, ulcers, fractures, dislocations, and some other surgical diseases; but they are not largely dwelt upon. He contemplated a distinct and entire work on surgery, but it was not executed.

Galen made some physiological experiments on living animals, and his account of the functions of the brain and nerves deserves particular notice: he maintains that sensation and volition reside in the nerves, and that, as through their agency, the presiding principle, the soul, derives its action, it is reasonable we should fix the seat of this principle in their origin, which being in the brain, he infers that this part must necessarily be the seat of the governing principle. This principle he considers to act through

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the medium of the animal spirit, the immediate instrument of sensation and motion, conveyed by the nerves to the different parts for sensation and motion. The animal spirit he regards as deriving its origin from the vital spirit, formed by, or generated in, the heart and arteries; and he assigns, as the particular source of this secretion, a curious vascular apparatus, known as the *rete mirabile Galeni*. This spirit was supposed to be finally deposited in the ventricles of the brain. In his reasoning upon this subject, there is a great deal that is curious, interesting, and well-founded. He holds that the animal spirit remains in the plexus for a considerable time, which, he says, denotes its importance, for, when nature is desirous of preparing any matter very accurately, she detains it for a length of time in the apparatus of its preparation. The instruments of its formation, he also observes, are delicate, in proportion to its nature and consequence; the parts, therefore, for this animal spirit, are of delicate construction, as are also the vessels for the milk and the semen—fluids of great importance; but as the animal spirit is of still greater consequence than those fluids, by so much are the vessels increased in their delicacy and minuteness. He regards the animal spirit as neither the essence of the soul nor its habitation; but its prime instrument both of sensation and motion. The soul, he conceives, however, to be resident in the brain. As motion is attributed by Galen to the agency of the animal spirit, conveyed to the muscles by the nerves, he conceives those parts to be for the most part tubular; though he admits that the nerves may be of so great a tenuity, as to preclude the possibility of detecting this by the sight. In many, however, he conceives it to admit of demonstration, and he instances the optic nerves, which he says have large foramina, and that a lucid spirit may be seen flowing through them, from their origin in the brain to their insertion into the eyes. In other cases he presumes it as possible that no spirit may flow through the nerves; but that they may be induced to operate by an impulse propagated to them. Of the immediate connexion between the animal spirit and the nerves, he does not feel himself able to pronounce.

Galen's doctrines became the adopted, from his time to that of Vesalius, who lived as late as the sixteenth century. He was the first to deny the existence of the rete mirabile, stated by Galen. He could not detect its presence in the human species; and he therefore infers, that the anatomical knowledge of Galen and his contemporaries was derived from the dissection of brutes, and he heaps upon them most unmerited derision. With the solitary exception, however, of the plexus, he fails in disproving the accuracy of Galen's descriptions, and is indeed obliged to adopt, upon the whole, the opinions of this celebrated man. Among those who stood forth to defend

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Galen against the attack of Vesalius, was Laurentius; who, however, differs from Galen in his opinion, that the nerves of sensation arise from the brain, and those of motion from the spinal marrow, and that the former are soft, and the latter hard. He does not admit the tubular condition of the nerves, but describes them as fistulous and spongy. He, however, seems inclined to admit of the possibility of the animal spirit flowing through apertures in the nerves, which we are not capable of discovering.

In the treatment of diseases, Galen was very favourable to bleeding; but he is particular in his directions respecting it, regulating it according to the climate, season, age, strength, temperament, and condition of the pulse of the patient, and he is the first to speak of the quantity that may be abstracted. He admits, in some acute cases, of fifty ounces being taken away in a day. In the time of Hippocrates, medicinal substances for the cure of diseases were mostly administered singly, and in simple forms. Between this period and that in which Galen lived, the compositions had become multifarious, and it was deemed essential by the latter to subject them to an arrangement and a method. He reduced the preparation of medicines to the simple operations of powdering and boiling, or infusing. The remedial qualities of his medicines accorded with his doctrines of the elements, and the humours, and were hence divided and subdivided in the same manner as the diseases themselves to which they were to be applied. It is not difficult to see to what confusion such a system must necessarily lead.

The writings of Galen make us acquainted with the practice and doctrines of many ancient writers, of whom, but for him, we should have remained in ignorance. But his works are verbose and prolix, they are full of divisions and subdivisions, embarrassed by definitions, and so complicated—so redundant—and so loaded with speculation, as often to render it a difficult task to arrive at the author's real meaning. His commentaries on the writings of Hippocrates may perhaps be considered as his best performances. Yet, notwithstanding the defects of the writings and system of Galen, his doctrines prevailed during no less a period than thirteen centuries; and he may be said to have exercised as great an authority in the schools of medicine, as did Aristotle in the school of philosophy. Suidas says that he composed not less than five hundred books on medicine, and two hundred and fifty upon other subjects, philosophy, geometry, logic, and grammar. A very large portion of these are lost—of the former not half remain, and of the latter there are only a few fragments.

In all branches of his profession, and in all matters relating to it, Galen appears to have been profoundly versed; and although his writings abound with theories, yet he was not a careless follower of his great master Hip-

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pocrates. In all his writings a spirit of inquiry and a close examination into facts are observable, and a very copious selection might be made to illustrate this, were it thought necessary. To give, however, one instance, let me refer to his observations on poisons, the nature of which he seems to have carefully studied. In his book, *De Temperamentis*, he observes, that animal poisons are innocuous, unless mixed with the blood; that they exert different powers outwardly and inwardly; that the saliva of the rabid dog, and the subtle venom of the viper, produce no sensible effect upon the stomach, taken internally, or on the sound surface of the body; that a wound is necessary to admit their morbific action: and, in his book, *De Theriac. ad Pison.* he particularly alludes to the instance of Cleopatra having destroyed herself by the poison of an asp, introduced into the system by a wound of her arm, which she had inflicted upon herself with her teeth. Nor is he less observant of the effects of some of the vegetable poisons, and especially remarks upon the power of habit on the human frame in resisting the deleterious properties of hemlock, when gradually accustomed to its exhibition.

There are many engravings of Galen, but there is no authority for any of them. I present to the reader of this memoir, the representation of a bust, unquestionably antique, said to be that of this eminent physician. It was presented to the Royal College of Physicians, by Lord Ashburton, who has obligingly informed me that it came to him through Alexander Adair, Esq., who died about five years since, at the advanced age of ninety two. Attached to it was a paper, stating that it had been given to him as a bust of Galen, by his relative, Robert Adair, Esq., surgeon to the forces at the siege of Quebec. Mr. Adair was not only a surgeon of great eminence, but he was a man of character and a scholar. In the celebrated picture by Benjamin West, representing the death of the commander, General Wolfe, Mr. Adair is figured attending upon his officer. What his authority was for stating this bust to be that of Galen is unknown; but no one will suspect him of wilful deception or mis-statement. Montfaucon and Visconti have given engravings of Medallions of Galen, but they cannot be regarded as possessing any special claims to authenticity. I beg to offer many thanks to Lord Ashburton, and to the president and council of the Royal College of Physicians, for their kindness in permitting me to engrave this interesting work of ancient art.

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G. J. Guthrie.

GEORGE JAMES GUTHRIE, F. R. S.,

&c., &c., &c.

"Omnis nostra Scientia duobus nititur fundamentis. Ratiocinio videlicet ac Experientia; hæc duo amicissimo fœdere juncta bonum medicum constituere debent."

LINNÆI, AMŒN. ACAD.

IT was well observed by the late John Bell that

"the situation of a Military Surgeon is more important than that of any other. While yet a young man he has the safety of thousands committed to him in the most perilous situations, in unhealthy climates, and in the midst of danger. He is to act alone and unassisted, in cases where decision and perfect knowledge are required; in wounds of the most desperate nature, more various than can be imagined, and to which all parts of the body are equally exposed; his duties, difficult at all times, are often to be performed amidst the hurry, confusion, cries, and horrors of battle. Even in the seasons of the greatest difficulty, cold and heat, hunger and fatigue, vexation of mind, and all the distresses of foreign service, aggravate disease; and, while they render his exertions of so much importance, teach him imperiously the necessity of an accurate and ready knowledge of his profession. It is to him that his fellow soldiers look up at the moments of distress: his charities and his friendship are prized beyond all price! What part of education is there, needful or even ornamental, for the surgeon living at his ease in some luxurious city, which the military surgeon does not require? What qualifications, of the head, or of the heart? He has no one to consult with in the moment in which the lives of numbers are determined! He has no support but the remembrance of faithful studies, and his inward consciousness of knowledge; nor any thing to encourage him in the many humble yet becoming duties which he has to fulfil, except his own honest principles and good feeling."

This is not an overdrawn picture; its reality is felt in every sentence; and if it be necessary to adduce any thing further in order to demonstrate the importance of the duties of a military surgeon, I might refer to the deplorable

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account by Thomas Gale, serjeant-surgeon to Queen Elizabeth, and contrast the state of military surgery in that period and at the present time. It has not only been raised from a barbarous condition; but its professors have, by proper education, by zealous application, and by distinguished talent, advanced the science, the practice of which they had embraced, and added much to the store of improvement of the profession at large.

GEORGE JAMES GUTHRIE, was born May 1, 1785. His great grandfather, a Scotchman, served with the army in Ireland at the battle of the Boyne. His father assisted and afterwards succeeded his maternal uncle, a surgeon in the navy, who retiring from the service after the peace of Aix la Chapelle, established himself in business for the sale of the *Emplastrum Lythargyri* of a better description than had hitherto been made, after a process he had become acquainted with during his service abroad. Succeeding to this business after the death of his uncle, he realized by it, and by the sale of most other surgical materials during the early part of the war, combined with habits of great industry and economy, a considerable sum of money, so as to be enabled to secure unto his daughter on her marriage ten thousand pounds, which are now enjoyed by her children. Unfortunately for his son, he alienated himself from his family late in life, entered into other pursuits and speculations, and on Mr. Guthrie's return from the Peninsular war, he found he had little or nothing to expect but from his own exertions. He did not hesitate, bnt place his "shoulder to the wheel," quite satisfied, that "labor improbus omnia vincit," and supported by all the junior medical officers of the army, and by nearly all his contemporaries and seniors, he has succeeded beyond his most sanguine expectations. To their kindness and exertions in his favor he feels he is indebted for the removal of all the obstacles which would have prevented his progress; and he never fails to acknowledge them by every means in his power.

Sent very early to school, he soon showed great aptitude in acquiring information. In addition to the ordinary course of classical education, he had the good fortune to learn French from an Abbé, one of those gentlemen driven by the revolution to England, who was glad to obtain his livelihood as usher at a school; and who for a small sum, became his private teacher for years, until he entered the army. From this gentleman he obtained that knowledge of the language, which caused him, throughout the war and even in France, frequently to be taken for a French emigré. He also obtained much information on other points of general education, which he found of the greatest advantage when at sea, and indeed through life, and to which he attributes much of his success. At thirteen years of age, being a tall stout lad, the late Mr. Rush, then Inspector-general of Army Hospitals, whose care he

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had been under for a serious accident, proposed to his father to have him educated for the military medical profession, promising him an appointment as soon as he was capable of holding it. The offer being accepted, Mr. Rush negociated the arrangement, by which he became the articled student of Mr. Phillips, the surgeon, of Pall Mall, and the particular pupil of the late Dr. Hooper, at the Mary-le-bone Infirmary. To this gentleman he considers himself indebted for his love for his profession; and the regard and esteem of the preceptor were equal to that of the pupil. In his last illness (diabetes, with abscess of the prostate) he placed himself in the hands of his three senior pupils, then resident in London, saying to Mr. Guthrie, "Mind, George, if I am to be cut, you must do it." Mr. Guthrie attended the last lectures of Dr. Baillie, and the subsequent ones given by Mr. Cruikshank, Mr. Wilson, and Mr. Thomas, in Windmill Street; and was one of those into whose arms Mr. Cruikshank fell when standing to deliver his last lecture on the brain. In June, 1800, the worst of the wounded from the Helder having been collected at the York Hospital, Chelsea, Mr. Rush appointed him an hospital mate, and he dressed under Mr. Carpue, and attended also the particular cases under the immediate observation of the late surgeon-general Mr. Keate. Ordered, during the season of lectures, four different times to other stations by the surgeon-general, Mr. Rush each time sent another in his place, until the month of March, 1801, when Mr. Keate was pleased to declare, that no hospital mates should be employed who had not passed an examination at the College of Surgeons. Mr. Guthrie felt this was not a matter of favour, but of capability; and that he could not on this occasion apply to his friend and patron to assist him. It was one of those cases in which a man must show he is capable of assisting himself; he accordingly having well considered the acquirements of those who he knew had lately passed, put his name down for examination for the diploma the next day, Tuesday, and was examined on Thursday by Mr. Keate and Mr. Howard. As a reward, Mr. Keate was pleased to say he must be promoted to a regimental assistant-surgeoncy; and Mr. Rush, selected for him the 29th Regiment, and introduced him to the late Lord Frederick Montagu, the senior Lieutenant-Colonel, who was then in London under his care. Lord Frederick sent him to Lieut.-Col. Byng, now Lord Strafford, commanding the regiment at Winchester; and it has been a source of infinite satisfaction to him to think, that he gained and preserved the esteem and regard of all the officers of the regiment; and all who are living have continued his firm friends unto the present day. He attended Lord Frederick Montagu with Dr. Holland in this last illness. Lord Strafford and his family place the utmost confidence in his ability and integrity; and the officers of the regiment who survived

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the war presented him, in 1815, with four silver dishes, of the value of 150 guineas, with an inscription "in remembrance of his unwearied zeal in the service, and of the most assiduous kindness to the individuals who have united in presenting this token of their sincere esteem and regard."

Mr. Guthrie accompanied the regiment to North America in 1802, and in 1806 was promoted, through the strong recommendation of the general commanding, to the rank of surgeon. The regiment embarked in 1807, immediately after its return to England with the expedition under General Spencer, for Gibraltar and Cadiz, and landed with Sir A. Wellesley in Portugal in 1808. Present at the battles of Roliça and Vimiera, after the last of which he was wounded by a musket-ball in both legs; at Oporto and Talavera; and having nearly lost his life from fever in the plains of the Guadiana, which confined him for months, he was promoted to the rank of surgeon to the forces in January, 1810.—Attached to the 4th division in 1811, on the morning of the memorable field of Albuhera, he found himself chief of nearly three divisions of infantry and cavalry, (the assistant-staff surgeon, the only other medical British staff officer being killed by a cannon-shot which struck him on the breast during the action,) and in the evening in charge of 3000 wounded. The grateful thanks, the regard of most of the officers seriously wounded, and who survived, were his reward. He was present at the three sieges of Badajos; that of Cuidad Rodrigo, the affairs of Elboden, Sacaparte, Sabugal, and the battle of Salamanca; and was always in charge of the wounded afterwards. He was appointed to act as deputy-inspector of hospitals on the 11th of October, 1812, and to take charge of the army under Sir Rowland, now Lord Hill, consisting of seven divisions of cavalry and infantry, with a large hospital at Madrid. Sir James M^c^Grigor, in giving him the charge of this, by much the largest part of the army, being himself at Burgos with the Duke of Wellington, wisely, as well as kindly, left him unrestricted to exercise his own discretion. The sudden retreat of this corps d' armée, warmly pursued by the enemy from Aranjuez on the Tagus, to Salamanca on the Tormes, encumbered with a large hospital of 800 sick and wounded, which had been formed in Madrid, and with 2000 sick in the whole on the line of march, without conveyance, and scarcely a spring waggon, rendered the position of the surgeon, as to character and reputation, perhaps even more critical than that of the general, who could at all times have turned and beaten his opponent. The commissariat stores and depôts at Madrid were lost, as may be seen in his clinical lectures referring to this subject; but the whole of the hospital, and the sick and wounded, were saved through the energy and decision of the medical officers. Arrested on the bridge of

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Alba de Tormes, one half of them were delivered over to proper officers whom Mr. Guthrie had assembled to receive them, and returned to their regiments, whilst the remainder were sent forward to Cuidad Rodrigo, in compact and regular order, instead of being allowed to wander over and plunder the whole country. He remained after this with the troops under Lord Hill, until ordered to take charge of the depôt of sick, wounded, and stores at Lisbon. The medical authorities at home refused, in the mean time, to gazette the appointment of deputy-inspector, which drew from the Duke of Wellington those remarks in his dispatches, which are so honourable to Mr. Guthrie. In his dispatches from Freneda, of the 31st January, 1813, he says, remonstrating on the subject of the medical promotions, "What interest can I have in these concerns,—till I saw Mr. Guthrie the other day in the hospital at Belem, I do not believe I ever saw Mr. Guthrie; although, from his reputation in the army ever since it came here, I intended to have made him surgeon to head quarters when Mr. Gunning was promoted, if he had not been recommended for promotion in another manner:" and when at Belem, his Grace was pleased to say, publicly, before all the officers present in the hospital, as Mr. Guthrie has recorded in his Clinical Lectures, "that he considered his conduct as deserving the imitation of the whole army, and that he might rely upon his promotion being confirmed." It was the first time a British army had retreated, for even half the distance, without losing its sick and its hospitals. It was not, however, until the following year, when in charge of the hospital station of Santander, containing 1500 sick and wounded men from the battles of Victoria, Pampeluna, and the Pyrenees, that, in consequence of these remonstrances, by order of H. R. H. the Duke of York, he was gazetted. The commission was not antedated to the period of his appointment as deputy-inspector in Spain, during the war in which country he had superintended some of its most successful and laborious services, and in consequence of which he has been overlooked in the various promotions which have since taken place.

In the beginning of 1814 he was present at the battle of Toulouse, in charge of the wounded during the action, and of the hospitals in that town, until the final retirement of the British army from France. The size of the town, the extensive accommodation it afforded, and the number of medical officers allotted to the care of about 1300 wounded, enabled them to display all the surgical talent they possessed, and the reputation which the surgeons of the British army have obtained throughout Europe, for science and ability, rests principally on the records which Mr. Guthrie has given of their practice.

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Placed on half-pay in September, 1814, at the shortest possible notice, he felt he must exert himself for the support of his family, now increasing upon him. Desirous of becoming more intimately acquainted with what others had been doing in London whilst he had been seeking information abroad, he attended once more the anatomical and surgical lectures delivered in Windmill-street in the autumn of 1814 and winter of 1815; the lectures of Mr. Abernethy; the practice of the Lock and Westminster Hospitals; and of the City Infirmary for Diseases of the Eye. He found he had learned much abroad; but that his seniors and contemporaries had not in the mean time been idle at home.

The return of the Emperor Napoleon from Elba, in 1815, brought the British army into the field of Waterloo. Having hazarded nearly all he had on his success in London, he could not accept the offer made to him of employment, or the solicitations of many kind friends, high in rank, to accompany them, although he promised to join them in case of accident; but the overpowering battle of Waterloo having taken place, he thought he ought to take that opportunity of verifying certain points of surgery which were not satisfactorily established. His firm friend, Sir James M'Grigor, now become director-general, was equally of this opinion, and urged him to go to Brussels, directing that he should be considered in every respect as if on full pay and on active service, only not interfering with the administrative duties of the station. He arrived there as soon as it was possible to do so, after the action was known in England; all the medical officers vied with each other in trying to receive him with the most marked attention; and, in order to assist his views, they placed themselves and every thing in their power at his disposal. He operated, only on two persons: one an amputation of the hip joint in a Frenchman, to whom the French government granted a pension and a place in the Hotel des Invalides, at the instance of his royal highness the Duke of York, and who was for several years the only living instance ever seen at Paris of success attending this operation. In the other case he saved a limb, and perhaps a life, by cutting down through the centre of the calf of the leg, and tying both ends of the peroneal artery. The case is detailed in the 7th vol. of the Medico-Chirurgical Transactions, for 1816. It was one attended by remarkable results; for, in 1828, the Baron Dupuytren having met with a case of this description, and unmindful of an unsuccessful one of the same kind, published in 1811 by Mr. Guthrie, and reported by the French translator of Mr. Hodgson's work, recommended that Mr. Hunter's operation on the fore part of the thigh, calling it Anel's, should be performed in similar cases, which operation Mr. Guthrie had repudiated

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in 1811. On this recommendation of the Baron's, Mr. Guthrie remarks in his work on the Diseases and Injuries of Arteries, published in 1830, "It is, nevertheless, very satisfactory that it should be so because it shows that the practice which M. Dupuytren recommends to the French Surgeons, in 1828, as worthy of their adoption, had been tried in the British Army, in 1810 and 1812, and proved to be ineffectual, and to be founded on erroneous principles: whilst in 1815, the true method of proceeding had been demonstrated by the same surgeons, and established on safe and scientific principles." Mr. Guthrie and the surgeons of the British army had thus gained a step in one of the highest branches of surgery, in advance of the greatest Civil Surgeon France has ever produced: and the principles he laid down in 1808, and promulgated in 1811, are those which are alone acknowledged at the present time.

Before he left Brussels on his return, he ascertained that one soldier had been wounded by a ball, which entered above the pubes, and had lodged in the bladder, where it had become the nucleus of a stone. Being about to return to England he did not like to operate on this man, as he could not remain to take care of him; when the whole of the officers, from the senior to the juniors, desirous of offering a last mark of their esteem, assured him, that if he would arrange to perform the operation in London, no one should touch the man but himself. The two persons whom he had operated upon were nearly cured, and this man came to London with them, and the ball and the stone were removed by Mr. Guthrie, with the happiest result in the York Hospital, in the presence of the adjutant and quarter-master-general, Sir J. M°Grigor, and a number of other officers who felt interested in the event, and the Duke of York was pleased himself to visit these men on their perfect recovery, and to interest himself in their favour.

Mr. Guthrie, who had lost the only two patients he had in London, by going to Waterloo, and who would never even speak to him afterwards, had also expended some forty pounds in his excursion, thought he might, after all the labour he had gone through, apply to be placed on full pay until it should be made good. His kind friend, Sir James M°Grigor, on his mentioning it to him, said, "My good friend, if I do this for you, it will be called a job, and no one would be more sorry for it than yourself. I will answer for it you will not fail of success, and you will not long want the money. If, however, you like to work without pay, and you think it will be an assistance to you, as I cannot employ an officer of your rank in London, I will give you two large clinical wards in the York Hospital, and you shall have all the worst cases that come from every quarter." The offer was gratefully accepted, and Mr. Guthrie did this duty for two years, until the hospital

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establishment was broken up. It enabled him to complete his observations, and to commence those lectures which were given gratuitously to all the officers of the public service for twenty years. At the end of the first course, in 1816-17, the medical officers of the navy, the army, and the ordnance, who had attended the lectures, presented him with a silver cup of the value of fifty guineas, with the following inscription:

"This inadequate but sincere memorial of the admiration of his great professional ability, and sincere respect for his private worth, is presented by the officers of the medical department of the navy, the army, and the ordnance, who derived instruction from his lectures, and happiness from his friendship, as they venture to hope for life."

In 1816, Mr. Guthrie proposed to Sir James M'Grigor the formation of an Infirmary for Diseases of the Eye. The Duke of York and the Duke of Wellington having, with several other noblemen and gentlemen, expressed their willingness to befriend and support it, a public meeting was held in January, General Lord Lynedoch in the chair, when Dr. Forbes was appointed physician, and Mr. Guthrie surgeon, to the institution. On the resignation of Dr. Forbes, in 1827, Mr. Guthrie remained in charge of the whole establishment, which, on a building being erected for it at Charing Cross was called the Royal Westminster Ophthalmic Hospital; and the Governors were pleased to relieve him from a part of the duties, by the appointment of his son, Mr. C. W. G. Guthrie in 1838 as assistant surgeon.

In 1823, he was appointed assistant surgeon to the Westminster Hospital, and was made fourth surgeon by the Governors in 1827, without a vacancy, as a mark of their estimation of his surgical reputation and character.

The secretary at war having been pleased to appoint Sir W. Adams to the charge of the pensioners of the army, suffering from diseases of the eye, in preference to all those officers who considered themselves entitled from their services to this office, the complaints of Dr. Vetch and others were brought before the House of Commons; and as the Duke of York declared he would support the claims of the medical officers of the army, provided they had the ability to maintain them, it ended in the appointment of a committee of the House of Commons to investigate the subject. The director-general selected Dr. Vetch and Mr. Guthrie to represent the medical officers of the army; and after a sharp contest of six weeks, conducted after the manner of an election committee, sitting every day, except Sundays, during which time the whole of the labour fell on Mr. Guthrie, it ended by the committee deciding that Sir W. Adams should be paid £1000 a year for the four years he had been employed, but that the office

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should cease; thus removing from the medical officers of the army the stigma to which they had been exposed.

Mr. Guthrie's career as a civil surgeon to the present time has been most deservedly successful. His abilities have been duly estimated by the public, and his professional brethren have shown themselves equally ready to recognize them. The best evidence of this is afforded by his election as a member of the council of the Royal College of Surgeons, in May, 1824; his appointment as professor of anatomy and surgery to the college, in July, 1828; and as one of the court of examiners in the same year. He filled the office of vice-president in 1831-32; that of president in 1833-34, and he is now again the junior vice-president. In what may be called the politics of the council, he may be said to have taken a most decided and active part, applying himself steadily and perseveringly to the removal of every grievance felt and declared by the Profession, or which he could himself think to be one, or which bore unjustly or harshly on individuals. Called before the committee of the House of Commons on medical education, as President of the College, he took to the committee room every paper which could give the chairman any information, placed them at his disposal, and supplied every thing wanting to complete any returns or papers called for. He gave privately, as well as publicly, the information he desired on every point; declaring to him he held his office only for the public good, and that no one more earnestly desired than he did, that the investigation should be perfect, and terminate for the public advantage.

From the printed evidence, it is apparent that he supported in the council, from the first year of his admission into it, the same liberal views taken by most of the members of the body out of it; and we find him supporting steadily the application of Messrs. Bennett and Grainger to be recognized teachers, in which they succeeded. Feeling strongly the injustice of the regulation which caused the members of the college generally to enter at the back door of the building, whilst those of the council, with a favoured few, and the visitors, entered by the front door, he firmly advocated the claims of the members in the strongest possible language, and insisted upon it perseveringly, year after year, until he succeeded in obtaining the redress of this grievance. The front door was opened; the bar which separated the members from the council was removed; a select few were no longer suffered; and during his presidency every member entered as an inherent right, merely giving his card or his name to the porter, to prevent the admission of improper persons. Supported always, sometimes preceded by Mr. Keate and others, some living, some dead, he urged in the same manner the just rights of hospital surgeons and teachers all over the country to

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participate in the advantages to be derived from teaching. The repeated editions of the regulations of the college respecting candidates for its diploma attest the frequency, if not the length or the severity of the discussions, which have ended, in the regulations of 1839, by the removal of all the remaining disabilities, and by the establishment of an extended course of education, equal to the wishes and expectations of most of the members of the Profession as far as relates to anatomy and surgery, whilst the expense to the student is less than it was even twenty years ago. It might be considered invidious to indicate all the points in the management as well as in the arrangements of the affairs of the college, both external and internal, in which he has taken a prominent part, if I were even in possession of precise information respecting them; but I believe I may say there is no one point which has escaped his supervision, supported by others entertaining the same sentiments as himself, that in the exercise of their official duty all private considerations were to be disregarded, and the public interests were alone to be protected; and that there is not one that has not undergone great improvement. I must not, however, omit to state that I believe the recent foundation of the scholarships in anatomy, human and comparative, and natural history, for three years, at £100 per annum, and the assistant surgeoncies in the navy and army, to be attached to the successful and deserving students at the end of that term, are mainly owing to his exertions.

The office of professor of anatomy and surgery to the college Mr. Guthrie held for four successive years, lecturing the first year on the Anatomy and Physiology of the Arterial System, and on the Injuries and Diseases of the Arteries; the second year he treated of the Anatomy and Diseases of the Urinary Organs; the third on the Anatomy and Surgery of Hernia; and the fourth on the Anatomy, human and comparative, of the Eye and its Diseases.

Thus far with respect to the course of education, practice, and general opinions of Mr. Guthrie. The advantages arising from his labours and the extensive opportunities he has enjoyed have been liberally given to the Profession, orally and by the press. The first professional memoir written by him, was after the battle of Albuhera, in 1811, being a collection of cases of wounded arteries which had come under his observation since the first battle in Portugal, viz., of Roliça, in 1808. They were sent to his friend Dr. Hooper, with the preparations of the ends of the arteries which he had preserved; and Dr. Hooper published them in the 4th vol. of the New Medical and Physical Journal, under the title of "Observations and Cases of Gun-shot Wounds." In this paper he pointed out in an especial manner the inapplicability of the theory of Aneurism to the treatment of wounded arteries, and the necessity which existed for tying both ends of a wounded artery. Mr.

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Hodgson, in his valuable work, published in December, 1814, three years afterwards, made particular reference to them; and he strongly recommended the practice enjoined by Mr. Guthrie. Its intrinsic merits had, however, established its superiority over all methods in the army, long before the termination of the war in the Peninsula, by the battle of Toulouse, in April of that year, and whenever his opinions or practice were opposed or thwarted, as they sometimes were, it was only by gentlemen fromhome, who came freshly imbued with the doctrines of the schools; and all lived to acknowledge their error.

The work on *The Diseases and Injuries of Arteries*, published in 1830, was the substance of the lectures delivered by Mr. Guthrie, as Professor of Anatomy and Surgery to the Royal College of Surgeons, the year previously; and his object, in the first part, is to demonstrate the value and importance of that portion of the pathological collection of the Royal College of Surgeons, which relates to the subject of Aneurism; and to prove that the labours and researches of Mr. Hunter anticipated nearly all the observations which have been made by his contemporaries and successors. In the second part, he enquires into the opinions of all those who had preceded him on the subject of the "means adopted by nature for the suppression of hæmorrhage," and points out in what manner they actually differed from nature. Deducing his facts from experiments and proofs, he goes on to show that the means are different in different arteries, according to their size and variation of structure; that it is not the same in large as well as in small arteries; and that it is not even quite the same in the upper and lower ends of the same artery.

The opinions thus stated are developed and maintained, with a clearness that prevents any misunderstanding; and supported as they are by proofs from the surgery of that hitherto unexampled scene of the Peninsula, they have not been impugned, as far as I know, in any medical work. He explained the subject of the collateral circulation in a manner different from what had been done before—showing that the blood flowing from the lower end of a divided femoral artery in a young person would necessarily be black for some days after the accident, whilst it would flow of a scarlet colour from the upper; the black blood from the lower orifice gradually changing to a lighter colour, so as to resemble, at the end of several days, that which flowed from the upper. He also proved, by cases drawn from the same great store-house of Surgery, that the opinions generally entertained of the capability of the collateral circulation to maintain the life of the limb, in all cases in which the flow of blood was suddenly averted in the main part, were erroneous; and that mortification would fre-

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quently ensue, unless aneurismal disease had previously existed; or, where the anastomosis of the extreme vessels was remarkably free, as in the hand. He has been, however, led to the belief, from what he has since seen in two cases in which he successfully tied the common iliac artery of the right side, that if a regularly sustained friction by the hands of one or two persons be kept up on the lower extremity for the first 36 or 48 hours, the danger of mortification may be greatly if not altogether avoided.

In his observations on the operations on wounded arteries, the extent of practice enjoyed by Mr. Guthrie is admirably manifested. The minute attention he has bestowed in all cases of injuries of the arteries, and in circumstances frequently most unfavourable to observation, deserve the highest praise. The cautious manner in which he draws his inferences are alike entitled to commendation. His work concludes with a statement of the operations that have been performed upon the most important blood-vessels of the body, beginning with the aorta and terminating with the radial artery. These are concisely yet conspicuously detailed, and many judicious remarks are made upon the manner in which the vessels may be most readily and effectually secured.

Of the various reports and papers relative to the diseases of the army in Spain, made at different times by Mr. Guthrie, one only has been preserved in print. It is published with the "Clinical Lectures on Compound Fractures, &c. &c.," and is dated May 1812. Sir James McGrigor, on the receipt of this paper, directed all the medical officers waiting on him with reports, to read it. We find from the dispatches published by Colonel Gurwood, vol. IX. p. 236, that the Duke of Wellington sent some part of it, relating to the 7th and 40th reg., home, for the information of the authorities; and Mr. Guthrie had the satisfaction of seeing all those irregularities and defects to which he had objected, gradually altered and removed.

At the termination of the same year, he transmitted to Sir James McGrigor, a Memoir on the Amputation of the Shoulder Joint, showing the facility and safety with which it might be accomplished. This was read by Mr. Gunning, then holding the office of surgeon-in-chief, to the gentlemen assembled under him at San Sebastian, and became the foundation of Mr. Guthrie's work on Gun-shot Wounds, the first edition of which was printed at the end of the year 1814, and which subsequently became, on the second and third editions, published in 1821 and 1827, '*A Treatise on Gun-shot Wounds, on Inflammation, Erysipelas, and Mortification, on Injuries of Nerves, and on Wounds of the Extremities requiring the different Operations of Amputation, &c. &c. &c.* In this work, as the preface states, he was desirous of making known many opinions, in opposition to those

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received and taught in common by the profession; and to preserve, for the surgeons of the British army, the credit of the improvements which they alone had introduced into the science and art of surgery. In his third edition, he says, "These improvements have not only been adopted, but pirated, and even advanced as something new by others, years after I had published them."

"Previously to the termination of the war, in 1815, and the appearance of the first edition of this work, the opinions of Mr. Hunter on the powers and capabilities of the human constitution were universally received. As general principles, they did little mischief; but when they came to be acted upon, the results were not found to coincide with the principles from which they were deduced. When an injury had occurred to a person in health, rendering the loss of a limb necessary, he recommended that an operation should not be performed until after suppuration had been established, a period probably of six weeks, which, even if the patient survived, was often found to be too late to be serviceable. From the failure of this practice, the contrary one of immediate amputation became gradually more general during the war; and at its close, I not only advocated and established the propriety of it, but examined the reasoning on which Mr. Hunter's opinions were founded, and I trust have proved it to be defective. That it was so ought indeed to have been presumed, when the facts were found to be opposed to the reasons."

"It was not, however, on the single point of amputation that the reasoning led into error; it embraced the whole subject of inflammation and its consequences, which I believe can only be consistently viewed on the principles regarding the human constitution which I have advanced. The variations in the nature and appearance of Erysipelas may through them be more easily comprehended, and the treatment of mortification more scientifically undertaken."

In my previous memoir of Mr. Lawrence, I have adverted to that gentleman's paper in the 14th volume of the Medico-Chirurgical Transactions, in which he recommends cases of Erysipelas Phlegmonodes to be treated by long incisions. Mr. Guthrie has strongly and frequently claimed this improvement for the officers of the army, who had treated the disease in the same manner during the Peninsular war, and as he had distinctly shown at length in the third edition of his work, giving even the particular detail of a case treated in the Westminster Hospital, one year antecedent to the date of the first of those which Mr. Lawrence has related: there can be no doubt from the circumstantial detail of facts and opinions in his work, that the priority lies with Mr. Guthrie.

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Baron Larrey has shown that in gangrene from wounds, amputation might occasionally be resorted to with success during its progress, in opposition to the received opinion of the schools; but he did not explain that this was entirely dependent on the circumstance of its being local. Mr. Guthrie has made a division into constitutional and local mortification; and the practice he has recommended to be followed in the different species of gangrene are improvements many adopt, without perhaps being aware to whom they are indebted for them.

The practice of the Peninsular war led to another important result in surgery; it dissipated that delusion which had so long pervaded the minds of surgeons of every description, that it was impossible to command the flow of blood through the great arteries. Mr. G. overturned at once this hypothesis, declared it to be visionary, and not only without foundation, but the reverse of fact. I cannot better conclude my remarks on this, which must be considered a standard work on these subjects, than by earnestly drawing attention to the following caution, so strongly laid down and expressed: "The facility with which these operations can be performed (alluding particularly to the amputation of the shoulder and hip joint), and the safety which attends them, has been shown; and all alarm has been banished from the minds of surgeons on these points. It is to be feared that they may now become unmindful of the precepts I have laid down, demonstrating their necessity, and recommend them to be performed when others less important might suffice."

Mr. Guthrie published in 1819, soon after his appointment to the Royal Westminster Ophthalmic Hospital, *a Treatise on the Operations for the Formation of an Artificial Pupil*, which, in 1823, he included in a larger work, entitled *Lectures on the Operative Surgery of the Eye; or, an Historical and Critical Inquiry into the Methods recommended for the Cure of Cataract, &c.* A second large edition followed in 1827; and he has promised another volume, including the remaining diseases of the eye, which will render the work complete.

Cheselden was, I believe, the first surgeon who attempted the performance of this improvement in Surgery. Yet it was not much valued, as will be seen from the writings of Sharp and Warner. Foreign surgeons—Richter, Janin, and Wenzel, even condemned it. Mr. Gibson of Manchester and Sir William Adams successfully adopted it, and many other surgeons have since succeeded in it. Mr. Guthrie has bestowed upon it particular attention, and has given us a compendium of the operations performed by many surgeons, and details no less than forty-eight different modes of performing the operation by various surgeons, from the time of Cheselden,

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to that of Quadri, of Naples. He shews that the mode of operating must vary according to the cause and nature of the morbid state requiring it; that the same method cannot be applicable to all cases. Of these, it is not possible here to give even an outline; they must be sought for in Mr. Guthrie's work.

Among many important facts and observations recorded in the "Lectures" for the first time, one new kind of Cataract was described and brought under observation, which had usually been considered an Amaurotic affection; and Mr. Guthrie has operated on some persons with success, who had the written opinions of several eminent men that this was the nature of their complaint. The cataract is congenital, scarcely apparent from its general state of transparency, and is only well marked when the pupil is fully dilated, when the jet black ring around the small lens, which has not kept pace with the growth of the rest of the eye, is very remarkable. It is a work of great research; the information contained in it is not only very elaborate but extremely accurate, and its value is increased by the addition of many excellent engravings. He has since published (in 1834,) a small pamphlet, giving a more detailed view of the different steps to be pursued in the operation for the extraction of a Cataract, entitled, *On the Certainty and Safety with which the Operation for the Extraction of a Cataract from the Human Eye may be performed.*

In 1833, Mr. Guthrie published a small work *On some points connected with the Anatomy and Surgery of Inguinal and Femoral Herniæ: being the substance of the Lectures delivered at the Royal College of Surgeons, in* 1831. In this work Mr. Guthrie's objects were to shew that the inner opening of the inguinal canal was not a part in a passive state, but contracted actively in consequence of the muscularity of its structure. He gives a sketch of the opinions of most previous writers on the subject, and those of M. Blandin, the latest French writer, and of Sir A. Cooper the latest English writer, in their own words, at length; and expresses his surprise at the great difference which exists among them in their various accounts of the same parts. The great object Mr. Guthrie had in view was to show that the inner opening of the ring, as it is termed, was in most instances essentially muscular; and to demonstrate, by dissection, a hitherto undescribed way in which this took place, and which he thinks will reconcile the discrepancy "observable between the anatomy, as hitherto described, and the surgery as hitherto taught," and particularly between recent and old herniæ. The principal anatomical point Mr. Guthrie wishes to inculcate is, that in no case does the fascia transversalis form the posterior part of the inguinal canal, as maintained by the French anatomists;

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but that even in the instances in which the conjoined tendons of the internal oblique and transversalis muscles pass directly across to form the sheath of the rectus, a tendinous layer descends from their lower edge in front of the fascia transversalis. The point of importance which Mr. Guthrie has insisted upon in the after medical treatment of Hernia, is the propriety and necessity of abstaining from very active purgatives, contrary to the opinions which had been previously entertained on this subject; and recommending in their place the mildest aperients which should act in the gentlest manner, lest that portion of the intestine which had been pressed upon and weakened might be destroyed, by the unnecessarily increased action giving rise to ulceration or sloughing, of which he gives instances.

On the subject of the anatomy of Femoral Hernia, Mr. Guthrie adds one point only to the many indicated by Sir A. Cooper; it is the manner in which the outer layer of the fascia lata passes over the hernia to be inserted into the pubes. The falciform process which lies over the femoral artery, and passes inwards to attach itself to Poupart's ligament, and to form the anterior part of Gimbernat ligament, he says does more than this; it passes on and is inserted also into the pubes on a plane lower than the insertion of the inferior pillar of Poupart's ligament, so that in fact it forms an arch exterior to the septum crurale, which when it is forced to descend, (as fascia propria,) is compelled to pass under it; and it is this, and not Poupart's ligament, which causes the great compression on the hernia, and is the seat of external stricture.

The descent of the fascia propria of Sir A. Cooper, the septum crurale of Cloquet, has been so well described and depicted by Sir A. Cooper, that nothing can be added to it. Mr. Guthrie has, however, objected to the term that the hernia descends into the sheath of the vessels, as leading to the inaccuracy entertained by some foreign writers, that it descended by the side of the femoral vein, which it does not, for the septum or side of the sheath is closely applied to the inside of the vein, and the fascia propria elongates and descends on the inside of the septum as a separate sac.

In 1836, Mr. Guthrie published his work *On the Anatomy and Diseases of the Urinary and Sexual Organs, being the first part of the Lectures delivered in the Theatre of the Royal College of Surgeons, in the year* 1830. In the anatomical part he more clearly explains the structure and position of the external layer of longitudinal fibres of the bladder, the way in which they cover the prostate, originating in part from the tendons or inferior ligaments of the bladder, and being inserted behind into a tendinous line, short of, but attached to, the posterior part of the prostate. He considers the fibres which surround the part immediately exterior to the

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orifice of the ureters to be placed there for the purpose of preventing the further flow of urine into the bladder when that viscus is full, rather than to prevent regurgitation on the kidney from it. He expresses a decided opinion that the part called neck of the bladder, possesses but little muscular contractility, whilst it is endowed with a considerable degree of what he calls vital elasticity, by which he thinks we are enabled to account for the occurrence of certain diseases, in a more satisfactory manner than formerly. This elastic structure he considers may be diseased without any necessary connection with the prostate gland, and form a bar at the orifice of the bladder relievable in a very different manner. He gives some clear views of the symptoms arising from pouches in the bladder, and from the irregular action of it, causing those strokes against the catheter which have so often been mistaken for stone, and which he has called the fluttering blows of the bladder. Surrounding the membranous part of the urethra, Mr. Guthrie has described two hitherto undiscovered muscles, of which he has given plates. These were at first denied, but stricter investigation has admitted the accuracy of the description, and they now take their place in all anatomical investigations. The surgical part of the work contains remarks and reflections, many of which are new, and deserving the attention of the practitioner.

In 1838, Mr. Guthrie published his last work,—*Clinical Lectures on Compound Fractures of the Extremities, &c.* It contains the account of a peculiar and undescribed injury of the shoulder joint, which occurred at the Westminster Hospital; and the account of another undescribed case of injury of the same part was published by him in the Medico-Chirurgical Review. The Clinical Lectures contain many historical remarks and observations made during the war in Portugal and Spain, which are often amusing and interesting; they are regularly carried down to the battle of Talavera only, although references are made to several other actions. The observations on Gun-shot fractures, and the necrosis which generally accompanies them, are of the deepest interest; and the strictness with which he forbids the amputation of an arm, under almost every circumstance of injury, except from cannon shot, and the rules which he lays down in consequence, should be read by every one who may have an arm to lose. He also earnestly recommends the removal of the head of the thigh bone by excision in all cases of fracture of its head and neck, instead of the amputation at the joint, as hitherto practised; and he gives with great precision, the surgical anatomy of the parts to be divided during the operation. The book on the Injuries of the Head, the Chest, and the Abdomen, with the general remarks which he has so long led the medical profession to expect

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is still wanting, and is essentially necessary to complete the history of the surgery of that eventful war.

I have thus noticed the principal works of Mr. Guthrie, some of which have been translated in different countries. The Emperor Alexander, in directing the two military ones to be translated for the service of the Russian Army, by the advice of Sir James Wyllie, was pleased to honor him by the transmission of two diamond rings, at different times, through his Ambassador, the Prince Lieven. The French and other writers and teachers entertain a high opinion of his talents; and have frequently expressed, in strong terms, the estimation with which they regard him. M. Delpech, in his tract on Hospital Gangrene, particularly refers to Mr. G., gives to the surgeons of the Army the merit of having first used the mineral acids to arrest the progress of the disease; and alludes to their successful employment in the hospital at Toulouse.

Mr. Guthrie's printed labours, however, are not confined to the works already noticed, for he has published some separate pamphlets, and many Clinical Lectures and other papers in different Journals and Reviews, particularly in Dr. James Johnson's Medico-Chirurgical Review, the Medical and Physical Journal, the London Medical Repository, and the Medical Gazette. The only account of the *Hunterian Oration* delivered by him in 1830, at the Royal College of Surgeons, is to be found in the Lancet. It gave the greatest satisfaction, and is highly deserving of publication. He has also contributed to the Transactions of the Royal Medical and Chirurgical Society three papers:—

1. (Vol. VII. p. 331.) *Case of a Wound of the Peroneal Artery successfully treated by Ligature.* This paper has been already noticed.

2. (Vol. VIII. p. 550.) *Observations on the Treatment of Syphilitic Diseases without Mercury.* Mr. Guthrie had the superintendence of all the hospitals in Lisbon in the spring and part of the summer of 1813. He also studied the diseases of the country under the treatment of their own physicians and surgeons in the civil hospital of that city, and rendered himself well able to judge of their results; and we find him consequently, at the termination of the paper already referred to, expressing his opinions on the subject of consumption, and the impropriety of moving persons suffering from the advanced stage of the complaint to hot climates as only hastening the unhappy termination, whilst the result at an early period may be most salutary. During part of 1815, 16, and 17, he had, with the different officers employed at the York Hospital, treated many cases without mercury of which this paper contains the

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results. He had attended regularly the practice of Mr. Pearson during all this time at the Lock Hospital, and had been able to compare the different modes of treatment in these various periods. Mr. Guthrie meets the question fairly, by stating that it was the opinion of *all* the eminent surgeons in the country then living, that a true syphilitic ulcer could only be cured by mercury, and must contaminate the system if that remedy were not given; and he goes on to say that many surgeons prided themselves on their peculiar talent in distinguishing those ulcers which absolutely required the use of mercury for their cure, from those which did not; but he adds, "the value of the prescience will be more duly estimated, now that it has been ascertained that every sore, of whatever description it may be, will heal without its use, provided sufficient time be granted, the constitution be good, the patient regular in his mode of living, and that attention be paid to cleanliness and simple dressing, and to keep the patient in a state of quietude."

This paper deserves even now to be read, after the lapse of twenty-two years, by all who are interested in the progress of the various opinions upon this disease. He enters into the subject of secondary symptoms, specific power and irritation, and the effectual influence of the specific remedy, mercury, in many points in a way not then noticed; and his concluding cautions on the mode of treatment should not be forgotten. I may observe that the result of his experience, since 1817, has been to confirm every word he has stated in that paper. It has, however, also led him to the conclusion, that to cure a soldier in an hospital is one thing, and to cure a young gentleman living about town in the usual way young men live, is quite a different matter, bearing not only upon the length and difficulty of the cure, but also in a remarkable manner on the frequency of the occurrence of secondary symptoms.

3. (Vol. XIII. p. 103.) *Remarks on the Diagnosis, and on the Inversion of the Foot, in Fracture of the Neck and upper part of the Thigh Bone.* In this paper Mr. Guthrie gives the history of a case, with the dissection, pointing out the manner in which, or by what causes, the foot might be turned *in* instead of *out*, in fracture of the neck of the femur; an accident, which had been said to be of a frequent occurrence, but of the nature of which no one had previously given any account.

The 8th volume of the London Medical Repository contains a paper by Mr. Guthrie *On the Effects of the Nitro-Muriatic Acid Bath in several Surgical Diseases.* This remedial measure was tried largely in the York Hospital, and the results are candidly stated in this communication.

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GEORGE JAMES GUTHRIE, F.R.S.

Among other contributions deserving of attention, I must content myself with noticing three in particular:—one a case of Malignant Tumor simulating an Aneurism, in which the common iliac was tied. The operation was performed in August, and the lady died in April of the ensuing year. After giving the relative anatomy of the parts, and pointing out the manner of performing the operation, with great clearness, Mr. Guthrie goes on to shew, that doing it in the way he recommends will, in all probability, render any attempt to tie the aorta unnecessary; whilst it is also the simplest and safest mode of proceeding to tie that vessel, if such a thing should be thought advisable. On examination of the common iliac artery, it was found to be three-eighths of an inch shorter than the left. The mark or depression made by the ligature was obvious, and at that part the artery was impervious, and for the distance of an eighth of an inch on each side of it so that the ligature, a single thread of dentists' silk, just cut the artery through, and the two cut edges united hy adhesive inflammation above and below, without forming a coagulum, and without diminishing or closing up to the next collateral branch; a fact, he goes on to remark, "I have said always existed—but which is quite contrary to the received opinions of the present day." The second is a Clinical Lecture, delivered in 1835, on the Removal of the Superior Maxillary and other Bones of the Face, in which he removed the superior maxillary, the malar, the lachrymal, the palate, and the inferior turbinated bones of the right side, scraping the body of the sphenoid bone, which could not of course be separated from its attachments. It was still necessary to dissect the posterior part of the tumor from immediately over the internal carotid artery; and the coolness and precision with which this was done, drew from all the hospital surgeons and teachers of anatomy who were witnesses of the performance, expressions of their admiration of the dexterity of the operator. Mr. Guthrie points out the relative anatomy of all the parts concerned in this most formidable operation, and the way in which it ought to be done in similar cases. He prefers in most instances the thin sharp chisel to the scissors, however powerfully made for dividing the bones. The scissors, from their thickness and mode of cutting, shaking and separating every attachment of the bone to which they are applied; unless it be so softened, from inflammation and the removal of the earthy parts, that it cuts like cheese—under which circumstances it can hardly be expected that all the diseased parts can be effectually removed, and that the disease will not return again. In a third case in which Mr. Guthrie was obliged to remove the eye-ball in a sound state, he ascertained that the yellow spot of Söemmering does not exist in the natural living state, and only becomes observable at the end of ten minutes. In a few minutes

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more it was very distinct, of a deep brown yellow colour, and the retina became gradually opaque, an anatomical fact of some little importance.

The pamphlets to be mentioned are, 1. *A Letter to the Right Hon. the Secretary of State for the Home Department, containing Remarks on the Report of the Select Committee of the House of Commons, on Anatomy;* which was printed in 1829: and, 2. *Remarks on the Anatomy Bill, in a Letter adddressed to Lord Althorp,* printed in 1832. In these publications many judicious remarks are made upon the necessity of legislative enactments to promote the study of anatomy, many of which have been since carried into effect.

But I am compelled to bring this memoir to a close. Mr. Guthrie's life has been one of unwearied activity and indefatigable research. He has laboriously studied to learn and to improve the profession, of which he is an ornament. In his character as a Lecturer, he is distinguished by peculiar earnestness, precision, and vivacity. He has a great command of language, and mixes, in a most agreeable manner, personal anecdotes and descriptions with the relation of his cases, so that they cannot fail to make a strong and durable impression on the minds of his hearers. His Lectures on Military Surgery, or that part of Surgery which especially treats of Gun-Shot Wounds, embrace a medical history of the progress of the Peninsular war; and display the hardships and the accidents to which, either by the effects of climate or the chances of war, our brave soldiers were exposed. In these Mr. Guthrie indeed appears to be as much a soldier as a surgeon; and the advantages likely to arise from the possession of such combined qualities need not be pointed out. In his discourses and in his writings he has never omitted any opportunity of asserting the high importance of anatomical knowledge to the successful cultivation of surgical science. In proportion to the eagerness displayed by any individual for the acquisition of professional knowledge will always be found a desire to advance the interests and dignity of the profession. Mr. Guthrie illustrated this in one of his Introductory Lectures at the College, when he contended for the necessity and justice of a medical representation in Parliament. He earnestly inquired what there was so withering in the study of medical science, that should render a man less capable of bearing his part in public affairs, than if he had applied to the law, or to dealing in money, corn, bricks, leather, or any manufacture in which so many very eminent men were engaged? Surely, he said, physic and surgery could each find one man whose locks were bleached by the hoar of sixty winters, rich in the worldly sense of the word, richer in the honors of the profession, and in the good-will of their contemporaries, who might, at a period like this, stand forth as its champions,

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when it was attempted even to make laws for the profession, without its sanction, and without its participation.

Mr. Guthrie is an associate of various Medical Societies, both of this and foreign countries, and was admitted a Fellow of the Royal Society, in 1827.

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J. [illegible] Ford

J. [illegible]

Thomas Hall Clarke

THE
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POET

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MARSHALL HALL, M.D., F.R.S. L. & E.

&c., &c., &c.

"Is there any science more curious, more interesting, more comprehensive, more sublime, than that which relates to the phenomena of life? and is not this science the basis of medical and surgical knowledge?

BRODIE.

DR. MARSHALL HALL is the fourth son of Mr. Robert Hall,* of Basford, near Nottingham, and was born February 18, 1790. The first part of his education was derived at an academy in Nottingham. At the age of fifteen he read, with immense delight, Dr. Watson's celebrated Chemical Essays, and followed up the subject by a study of the works of the unfortunate Lavoisier. Henceforth his life became a life of intellectual industry. At the period

* This gentleman was contemporary with the Arkwrights, the Peels, and the Strutts, in the early period of the cotton manufacture, and he was the first to make a practical application of the discovery of Berthollet, that chlorine (then designated the oxygenated or hyper-oxygenated muriatic acid) possesses the property of discharging vegetable colours, to the art of bleaching. On this subject some interesting correspondence took place between Mr. Hall and Dr. Priestley, then residing in Birmingham, and Mr. Henry, of Manchester—the authorities of that day on questions in chemistry. Those philosophers, however, did not encourage Mr. Hall's enterprise; and the less philosophical men were so far from conceiving it possible to accomplish, in a closed room, during a few hours or minutes, that which had formerly required the full and free exposure to the atmosphere, and the sunbeams by day, and the dews of night, for many days or weeks, that they designated the place in which the attempt was made by the title of Bedlam, which it still retains, as a perpetual memorial, it should seem, of the triumph of science over ignorance and prejudice.

Mr. Hall's second son, the present Mr. Samuel Hall, has also distinguished himself in his department of study, and is the author of several important inventions and improvements in the useful arts. It is to this gentleman we are indebted for the mode of "clearing" lace, fine muslins, &c., by passing those delicate fabrics over a fine gas flame, urged

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mentioned he met with Mr. Robert Cook, then an apprentice at Newark, now well known as an eminent practitioner at Gainsborough, and two or three years his senior. This acquaintance ripened into a permanent friendship. Mr. Cook passed the usual period of study in London, and his friend waited with impatience his return to Newark. Here Mr. Cook settled at first, and Mr. Hall became his assistant. Never were master and assistant more linked together by affection and their common studies!

At the close of 1809 Mr. Hall went to Edinburgh, attended the lectures of Dr. Gregory, Dr. Hope, and Dr. Rutherford, to whom he was clinical clerk for a period of six months. He formed an intimacy with Dr. Duncan jun., and assisted him by contributions to the Edinburgh Medical and Surgical Journal. He also furnished the Review of Dr. Sutton's useful work on Delirium Tremens. He became in succession senior President of the Royal Medical Society, resident Physician's Clerk in the Royal Infirmary, and Fellow of the Royal Society of Edinburgh. In the Royal Infirmary he first took up the subject of Diagnosis, and during his clerkship he gave a series of lectures on this subject, and prepared the work which he afterwards published in 1817. In June, 1812, Mr. Hall graduated, writing his Thesis on *Irregular, or Slow Nervous Fever*. In 1814 he visited Paris, Göttingen, Berlin, &c., and made intimate acquaintance with the already venerable Blumenbach. On his return he settled in Nottingham, and speedily acquired an extensive practice. He, however, devoted all possible time to the arrangement and publication of various works:—

On Diagnosis. Lond. 1817. 8*vo. 2d edition.* 1834. A 3d edition was included in a work on the Principles and Practice of Medicine, in 1837. The importance of this subject in the practice of medicine, will be readily admitted; and it is rather surprising that its consideration, as a separate branch, or in a systematic form, should have been neglected for so great a length of time. Dr. Hall, when merely a pupil studying at Edinburgh, directed his attention to it in an especial manner, and delivered lectures upon it. His work presents a digest of his observations, arranged

upwards by the air-pump; one of the most beautiful applications of science to the useful arts with which we are acquainted. To the same gentleman, besides some minor improvements, in various branches of our manufactures, we are further indebted for some recent and important improvements in the steam-engine, by which the steam is condensed, by being made to pass through a series of metallic tubes, and the water so reproduced is returned into the boiler, so that we have a perpetual *circulation* of the same portion of fluid! The value of this improvement in our distant steam navigation,—first, in rendering a large supply of water unnecessary; and, secondly, in totally preventing deposit within the boilers, will be obvious at once to the scientific reader.

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and confirmed by subsequent practice and experience. It has been admitted to be a valuable contribution to medical science, and may be considered as the first step to fame in Dr. Hall's career. At the time at which he wrote, the improvements introduced by the French pathologists were unknown in this country; his observations, therefore, upon the countenance, the attitude, the peculiar and distinctive modes of respiration, as diagnostics in disease, are to be looked upon as original, and show very considerable powers of investigation. The late Dr. Baillie was much interested by this performance, which he admitted to have read "with great advantage." This is high praise from a physician of vast experience and observation, which all must admit Dr. Baillie to have been. Dr. Hall's view of the subject is very discursive. He traces it through all its ramifications of symptoms, diseases, and their complications. Lately diagnosis would seem to have both its centre and its circumference within the boundaries of the stethoscope. An intimate acquaintance with pathological science, appears to me the most essential step towards obtaining a knowledge which may enable the practitioner to form a true diagnosis. An observation of morbid appearances, and the connexion of those with the symptoms during life, must form the great aids towards perfecting the judgment in the distinction of diseases. Dr. Hall had for his object to collect and arrange every difficulty in the distinction of diseases, to ascertain what difficulties in diagnosis are likely to occur, what mistakes liable to be made, and to form an arrangement best adapted to obviate them.

In 1818 Dr. Hall published a work entitled *On the Mimoses; or, a Descriptive, diagnostic, and practical Essay on the Affections usually denominated Bilious, Nervous, &c. Second edition.* 1820.

By Mimoses Dr. Hall means a class of diseases, each of which consists of a more *general* morbid affection, usually combined with some *topical* symptom or symptoms. The general affection he describes as complex and various; the complications multiform and changeable, and by their incidental predominance, frequently imitating other diseases widely different in their nature. The causes to which these are assigned, have been generally to derangements in the digestive system; and to Dr. Hamilton and Mr. Abernethy we principally owe our previous knowledge upon these subjects. The varied character of these affections induced Dr. H. to adopt the generic term *Mimoses*, and of these he distinguishes five forms: *M. acuta*, which he thinks identical with the *Scorbutus* of Willis and others; *M. chronica*, the *Dyspepsia or Hypochondriasis* of most writers; *M. decolor*, chlorosis; *M. urgens*, hysteria; and *M. inquieta*, which embraces the effects of intestinal irritation, and of exhaustion from the loss of blood or other causes. There is such exceeding difficulty in affixing to diseases names which shall corre-

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spond, in all respects, with their practical character—and those designated by the terms Dyspepsia, Hysteria, Chlorosis, &c., are so generally known and employed—that it is not at all surprising Dr. Hall's nomenclature should not have been adopted. He must, indeed, have felt this, for in the second edition of his work he has arranged its title more conformably to ordinary use, and calls it *An Essay on Disorders of the Digestive Organs and General Health, and on their Complications.* Any attempt to establish a class of general and local morbid affections more distinctly and extensively than before—to collect and embody the system of facts which belong to this part of pathology—to present accurate descriptions of the different forms, and to trace the diagnosis of the numerous complications of those disorders—is entitled to commendation, and in this work Dr. Hall may be said very successfully to have accomplished this object.

In 1820, he published *Cases of a Serious Morbid Affection occurring principally after Delivery, Miscarriage, &c., but also independently of the Puerperal State.* The effects of excessive hæmorrhage, or inordinate loss of blood and exhaustion from other causes, and the resemblance of the symptoms to those arising from inflammation, had not been sufficiently pointed out until Dr. Hall drew the attention of his professional brethren to the subject in this little tract. In a practical view, the distinctions between these conditions are of the very first importance. Dr. H. has contrasted and distinguished them, he has shown the dangers by which the subject is beset, and has pointed out, with great ability, the circumstances in which these are liable to be encountered. He conceives the morbid affection, in question, to constitute a great proportion among puerperal cases, and a great majority among the fatal ones; and of these cases many, he contends, are daily rendered so by a mistaken use of the lancet, which may, indeed, in these instances, be truly denominated a "minute instrument of mighty mischief." The semblance of symptoms which arise from irritation, and those which actually result from inflammatory symptoms, requiring a totally different mode of treatment, are familiar to every surgeon who has enjoyed extensive opportunities of observing the effects produced by injuries of the frame, particularly of the nature of compound fractures. These have been attentively studied by various eminent surgeons; but the application of these to other cases occurring in the practice of medicine and midwifery, had not been so distinctly made as of late, until Dr. Hall pointed out the great importance of attending to diagnosis in these cases.

In 1825, Dr. Hall published a small volume of *Medical Essays: on the Effects of Intestinal Irritation: on Some Effects of Loss of Blood: on Exhaustion and Sinking from Various Causes.* These subjects have been

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more amply treated of in the author's subsequent publications, presently to be noticed.

In 1826, Dr. Hall quitted Nottingham (where he filled the office of physician to the general hospital) for the metropolis, a field for more enlarged observation, and favourable to more extended inquiry; and in 1827, he published *Commentaries on some of the more important of the Diseases of Females.* In these he embodies various observations scattered throughout the works already noticed, and enters more particularly into an investigation of the characters of Female Disorders. He treats of the morbid affections incident to female youth; those which supervene during pregnancy, parturition, and the puerperal state; and those which belong to the middle and later periods of life. In the preface to this work, Dr. Hall feelingly laments that, among the numerous existing establishments for the relief of the sick poor, there are still wanting medical institutions devoted to the distressing cases peculiar to females, to which they might resort with the confidence that the utmost attention would be paid to relieve their sufferings, and to avoid wounding their feelings. Guy's hospital, to a certain extent, supplies this deficiency in its obstetric ward; and it is much to be regretted that the other metropolitan hospitals have not profited by the example set by this munificent establishment.

Dr. Hall's observations on the necessity of exercise in the open air in female youth, and the importance of its forming an essential part in the system of education, are entitled to the attention of all parents, and those to whom the nurture and care of children are entrusted. The diseases with which females are so often afflicted for the entire period of their lives, is frequently attributable to the neglect of proper means on the part of those to whom their education is assigned.

In the consideration of the disorder of the general health incident to female youth, he dwells particularly upon the appearances presented by the tongue; and he has given plates to show the various changes to be observed upon a careful inspection of this organ. These are coloured, and give a most faithful representation of the states described. He notices a peculiar condition, which he designates as the *lobulated* tongue, which, he says, he has repeatedly observed to accompany simple enlargement of the liver, and of which he therefore considers it to be a symptom; or rather a symptom of such protracted disorder of the general health, as is apt to ensue in enlargement of this organ. I am not aware that this has been noticed by any other author, and I am not able from my own observation to give an opinion upon the subject. The consideration of the nails forms also a topic of inquiry with Dr. Hall; and he has connected the peculiar form, hue, brit-

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tleness, &c. of these parts with peculiar morbid conditions, for a description of which I must refer the reader to the work itself. A second edition was published in 1830, under the title of *Commentaries principally on those Diseases of Females which are Constitutional.*

In 1829, a small tract intended to form an appendix to *Researches on the Morbid and Curative Effects of Loss of Blood,* was published by Dr. Hall. It is entitled, *On a Morbid Affection of Infancy arising from circumstances of Exhaustion, but resembling Hydrencephalus.* This affection has its origin in early infancy, chiefly in diarrhœa or catharsis; in the later periods of infancy, in the loss of blood, with or without the relaxed or evacuated condition of the bowels. Dr. Hall had previously noticed this subject in his Medical Essays, and Dr. Abercrombie and Dr. Gooch have also paid attention to it. The cases are of extreme interest, and show how frequently the effects arising from exhaustion are mistaken for inflammation or congestion of the vessels of the brain.

In 1831, Dr. Hall published *A Critical and Experimental Essay on the Circulation of the Blood; especially as observed in the minute and capillary Vessels of the Batrachia and of Fishes.* The experiments made by the author confirm those of some other physiologists, with respect to the independence of the circulation of the brain and spinal marrow; and he shows that the entire brain and spinal marrow of the frog may be removed without effecting the immediate extinction of life. The functions of nutrition and secretion may therefore be looked upon as distinct from the existence of the brain and spinal marrow. The arterialization of the blood is essential to nutrition and secretion; and this process in the frog is partially effected by the skin. In the web of the frog the minute nerves pursue a course close to the minute arteries, and Dr. Hall suggests that the terminal nerves and arteries may ultimately join and form the immediate secretory organs. In a prefatory chapter on the Principles of Investigation in Physiology, Dr. Hall adverts to a subject, which on more than one occasion I have felt it my duty to notice—the performance of experiments on living animals. (See Memoir of Dr. J. Blundell.) Too great an outcry has been raised upon this point; and those who deem it no sin to torture for sport, yet hold it cruel to experiment for the advancement of a science, which has for its object the benefit of mankind. Dr. Hall enters upon a consideration of the anatomy of the minute and capillary vessels, which latter he seems disposed to think mere canals; but the subject is not yet sufficiently investigated. Dr. Hall gives the opinions entertained by Galen, Harvey, Haller, Huxham, Hunter, Bichat, and Barry, on the powers which circulate the blood, preparatory to a detail of his own experiments and observations; and he

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enumerates many particulars to demonstrate the extent of the influence of the heart in the circulation, and of the evidences of the muscular action of the arteries, on which point he gives a description of an artery in the frog and toad, which he erroneously conceived (as Professor Müller has shown) to pulsate independently of the heart. Dr. Hall contends for the want of proof of irritability in the true capillaries, and assigns to Huxham the merit of having been the first to suggest the influence of atmospheric pressure during inspiration upon the venous circulation, which was afterwards demonstrated by Sir David Barry. Dr. Hall shows that certain causes tend to modify the flow of blood along the minute arteries and veins and capillary vessels, and that they become variously pulsatory, oscillatory, retrograde, or arrested, in one or other of the three series of vessels. The influence exerted by the brain and spinal marrow upon the circulation is a most important inquiry, and one which has long engaged the attention of physiologists, though not yet satisfactorily determined. In this inquiry, Haller, Spallanzani, Fontana, Whytt, Le Gallois, Philip, Clift, Flourens, Brachet, and others, have toiled and contributed much to the knowledge obtained upon this subject. Dr. Hall has added the results of his experience and observation, and by a most ingenious series of experiments he shows the independence of the circulation of the brain and spinal marrow.

In 1830, he published a volume of *Observations on Blood-letting, founded upon Researches on the Morbid and Curative Effects of Loss of Blood*, a second edition of which appeared in 1836. The principal object of this work is to examine into the "phenomena arising from the loss of blood, of the remarkable difference in the degree of tolerance or intolerance of loss of blood in different diseases, of the equal danger of an inefficient and undue use of the lancet, and of a rule which may be adopted to obviate this danger." This is intended to establish a distinction between two classes of morbid affections, that of inflammations, and that of irritations.

Greater attention has been paid to the curative, than to the morbid effects of blood-letting, the latter of which Dr. Hall arranges under the heads of syncope, convulsion, delirium, coma, and sudden dissolution. These are the immediate effects, whilst the remote are to be found in those which arise from exhaustion, with excessive or defective re-action, with sinking, with delirium or mania, with coma and with amaurosis. The quantity of blood the loss of which a patient is capable of sustaining, every practitioner knows to vary considerably; some persons faint at three or four ounces, whilst others can admit of the abstraction of fifty, sixty, or seventy ounces, without producing that effect. Dr. Hall endeavours to account for this: he says, "Different diseases induce in the constitution different powers or

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susceptibilities in regard to the effects of loss of blood. Each disease appears, indeed, to possess its own peculiar and intrinsic virtue in this respect. This is determined by placing the patient perfectly erect, and bleeding to incipient syncope; the quantity of blood which flows is the measure of the protective influence of the disease in one class of cases, and of its influence in superinducing a susceptibility to the effects of loss of blood in the other.

"An interesting scale of diseases may be formed representing those properties. It would begin with congestion of the head, or tendency to apoplexy; inflammation of the serous membranes, and of the parenchymatous substance of various organs, would follow; then acute anasarca; and, lastly, inflammation of the mucous membranes. This part of the scale would be divided from the next by the condition of the system in health. Below this would be arranged fever, the effects of intestinal irritation, some cases of delirium, reaction from loss of blood, and disorders of the same class with hysteria, dyspepsia, chlorosis, and cholera morbus.

"Persons in health and of moderate strength, will generally faint, if bled in the erect posture, on taking fifteen ounces of blood. I have known seventy ounces to be taken in the sitting posture, in the tendency to apoplexy, without syncope; but the case is an extreme one. Patients with pleuritis or pneumonia, frequently lose thirty-five ounces of blood without fainting. In bronchitis, little more is borne to be lost than in health. A stout person in fever will frequently faint on losing ten, twelve, or fourteen ounces of blood. In intestinal irritation, with urgent symptoms, even the abstraction of nine or ten ounces of blood will generally induce deliquium. In delirium tremens, or puerperal delirium, the patient soon faints from loss of blood. The same thing is still more observed in those cases of violent reaction which arise from loss of blood itself. In dyspepsia, hysteria, and chlorosis, the susceptibility to syncope from loss of blood is very great. I have known a patient of good strength, affected with cholera, faint on taking four ounces of blood, although she had shortly before borne to lose nearly twenty ounces without faintness, under the influence of inflamed mamma.

"I imagine that the rationale of this fact will be found in the obvious difference in the nature of those diseases. In all those cases in which the circulation of the heart and larger arteries alone is affected, and especially in such as involve irritation or exhaustion, there is early syncope on taking blood. But in such cases as consist in an affection of the capillary circulation, and especially such of those as affect the head, it requires the abstraction of much blood to induce deliquium. Syncope is prevented by the

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influence exerted by this state of the capillary circulation over that of the heart and larger arteries, and over the whole system, and especially over the circulation within the brain; and it does not entirely subdue the morbid action of the capillary vessels, even when induced. To induce syncope in pure fever, we have then but to subdue the state of re-action in the heart and larger arteries. In inflammation we have not only to do this, but to overcome the influence of a permanent morbid action of the capillaries. This is especially observed in inflammation of the serous membranes, and within the head.

"The practical application of this fact, consists chiefly in its affording a rule for blood-letting in all cases in which this measure is required to be fully instituted; a guard against undue blood-letting, both in this and some other cases, and a source of diagnosis."

The consideration of specific diseases, fever, inflammation, and irritation, in relation to blood-letting, are of great practical importance, and well deserve attention. The Essay on a Hydrencephaloid Affection in Infants forms the Appendix to this work.

In 1837, Dr. Hall published a work entitled *Principles of the Theory and Practice of Medicine.* This includes a third edition of his Treatise on Diagnosis, of which I have already spoken. Of the Principles of Medicine no analysis can here be offered, as it is in a great measure elementary, but it also embraces a vast variety of ingenious and original observations.

Memoirs on the Nervous System. Lond. 1837. *4to.*

Lectures on the Nervous System, and its Diseases. Lond. 1838. *8vo.*

The application of physiological science to practical medicine, appears to be Dr. Hall's grand aim; and he has very successfully accomplished this object in his researches into the nervous system. The "Memoirs on the Nervous System" consist of communications made to the Royal and Zoological Societies, from the year 1832 to the present time. In this work Dr. Hall lays claim to the discovery of a new principle in physiological science, which has deservedly excited much interest, particularly among the foreign physiologists, of whom it is sufficient to specify Professor Müller, of Berlin, and M. Flourens, one of the perpetual secretaries of the Institute of France. Those illustrious *savans* have paid to Dr. Hall the tribute of their esteem for his researches, the nature of which I shall now endeavour to state as accurately as in my power, and as nearly as possible in the author's own words. It is necessary to premise that the principle of action, the discovery of which is claimed by Dr. Hall, is the same as that which was described by Haller as the *vis nervosa,* by Müller as the *motorische kraft,* and by Flourens as *excitabilité.* This principle, though long known to physio-

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logists, had certainly not held the rank in physiology to explain the phenomena of life, health, and disease, in the manner, and to the extent, to which Dr. Hall has applied it. It has been ascertained to exist in the tubercula quadrigemina, the spinal marrow, and the motor nerves, to the exclusion of the brain and the nerves of sense, the olfactory, the optic, the acoustic; and in the anterior, to the exclusion of the posterior roots of the spinal nerves. Dr. Hall says that it has been supposed by all physiologists, that this principle acts *only* in the direction of the branches or fibres of nerves, proceeding *from* their source in the nervous centres *to* their destination in the muscular system. This was the opinion of Haller. Müller extends the knowledge of it farther, and lays down the four following laws in regard to the mode of action of the motor power:—"1. The motor power acts *only* in the direction of the primitive nervous fibres going to muscles, or in the direction of the branches of the nerves, and *never backwards*. 2. The mechanical or galvanic irritation of a part of a nervous trunk does not excite the motor power of the whole nerve, but only of the isolated part. 3. A spinal nerve, which passes into a plexus, and assists, in the other spina nerves, in the formation of a large nervous trunk, does not impart its motor power to the whole trunk, but only to the fibres which it affords in its course from that trunk to the branches. 4. All nervous fibres act in an isolated manner from the trunk of a nerve to its ultimate branches." Dr. Hall contends for a wide and extensive influence and agency of this principle in the animal economy. He made numerous experiments to illustrate the subject:—The head of a turtle being removed to destroy sensation and volition, he denuded and divided the spinal marrow in the dorsal region; he then irritated the *lower* end of the *upper* portion by a needle, the forceps, and galvanism, and he produced movements in the *superior* extremities. The motor power had acted in a retrograde direction. In another decapitated turtle, he laid bare the spinal marrow in the dorsal region, and stimulated it as before, and he produced motions in *both* the superior and the inferior fins. Instead of denuding the spinal marrow, in a third experiment, he exposed a spinal intercostal nerve in a decapitated turtle, and stimulated it as he had done the spinal marrow itself in the former experiment, and he produced similar movements in both the superior and inferior extremities. In this experiment the motor power again acted in a retrograde, or in an *incident* course, into the spinal marrow, and both upwards and downwards into both extremities. In the next place, instead of irritating the spinal marrow, or the nerves, he irritated the *cutaneous* surface to which those nerves are distributed, in a decapitated turtle, and precisely the same phenomena ensued; both superior and inferior extremities moved. The same

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effects were observed when he irritated the extremities of any of the fins. Thus he traced the operation of the *vis nervosa* of Haller in new directions. By irritating the border of the glottis in an animal from which the brain had been removed, the larnyx was closed; on irritating the border of the anus, the sphincter was firmly contracted. By an extended series of experiments he proved that these, and a great number of other physiological phenomena, depend upon the action of the spinal marrow. But he has made further applications of the excito-motory power to physiology, and he found that all the *acts* of this system are the result of *excitation*, by stimuli applied to nerves which proceed to the *spinal marrow*, whence other nerves take their origin, and pursue a *reflex* course to the parts to be moved. This system of *incident* nerves of the *true* spinal marrow, and of *reflex* nerves, is new to physiology. It presides with its own power over the acts of ingestion and expulsion in the animal economy—over the orifices and sphincters of the animal frame. *Five* circumstances, he says, are required in every instance of an excito-motory act: 1, *an excitant*; 2, *an excitor-nerve* continuous to the nervous centre; 3, the integrity of that *centre*; 4, *a motor nerve* continuous to the muscle, to be excited into contraction; and, 5, that *muscle* endowed with perfect irritability. If any part of this arc be interrupted, the phenomenon ceases instantly. Dr. Hall illustrates all these conditions by a variety of experiments, and from them he infers the existence of, 1, a *true spinal marrow, physiologically* distinct from the chord of intra-spinal nerves; 2, *a system of excito-motory nerves, physiologically* distinct from that of the sentient and voluntary nerves; 3, a nervous influence—the *excito-motory* power—operating in directions *incident, upwards, downwards*, and *reflex*, with regard to the true spinal marrow, the centre of this excito-motory system. The entire medulla spinalis in the *vertebrata* consists, then, of *two* portions, so intimately blended together, indeed, as not to be easily separated by the anatomist, and, perhaps, only to be distinguished by physiological experiments, and pathological observations. The *first* of these is the intra-vertebral *chord* of sentient and voluntary *nerves*, which proceed *to* and *from* the *cerebrum* as their centre. The *second*, which may be denominated the true spinal medulla, is distinguished by being *excito-motory*, and is the axis of a peculiar system of excitor and motor, or excito-motory nerves, generally, but, perhaps, not invariably, blended with the former.

From these statements and experiments, Dr. Hall thinks he may regard the proof as quite complete, that the principle formerly designated as the vis nervosa, and that which operates in producing that series of actions, which have been designated instinctive, automatic, sympathetic, &c., but which he has called excito-motory, are one and the same. And, having

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thus established the existence of the excito-motory system, he proceeds to trace the power as exhibited in a *special* anatomy, physiology, pathology, and therapeutics, a close study of which will amply compensate the reader for his trouble in the course of an elaborate, intricate, and most important inquiry.

Dr. Hall, in addition to the distinct publications already noticed, has contributed various papers to the Royal and Medico-Chirurgical Societies.

To the Royal Society, of which he was elected a Fellow, in 1832, he presented:—

1. (April 28, 1831.) *On the Anatomy and Physiology of the Minute and Capillary Vessels.*

2. (May 5, 1831.) *On the Effect of Water, raised to Temperatures moderately higher than that of the Atmosphere, upon Batrachian Reptiles.*

The substance of these is embodied in his work on the Circulation of the Blood.

3. (Feb. 23, 1832.) *Theory of the Inverse Ratio which subsists between the Respiration and Irritability in the Animal Kingdom.* The expression "inverse ratio," is not employed by Dr. Hall in its strict mathematical sense; but merely to designate a general fact, that, in cases in which the quantity of respiration is great, the degree of irritability is low; and that in cases in which the quantity of respiration is small, the degree of irritability is high. By quantity of respiration, he means the quantity of oxygen gas consumed by the process. To ascertain this, he contrived an apparatus which he has called a *pneumatometer*, for an account and engraving of which I refer the reader to the Phil. Trans. for 1832, part II. p. 321, in which the paper, together with the following communication is printed.

4. *On Hybernation.* The phenomena of hybernation Dr. Hall refers to a primordial law of periodical sleeping, influenced by external circumstances. In this sleep, the respiration, and with it the evolution of animal heat, and the other functions of the economy, gradually diminish; the irritability of the muscular fibre, only, becoming augmented. The animal is reduced in a word to a reptile state of existence. Dr. Hall particularly insists upon the distinction of true hybernation, which is a preservative state, and may arise without the influence of cold and torpor, which is destructive, and, according to his experience, uniformly fatal.

5. (Phil. Trans. 1833, Part II. p. 635.) *On the Reflex Function of the Medulla Oblongata, and Medulla Spinalis.*

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6. (Feb. 16, 1837.) *On the Functions of the Medulla Oblongata and Medulla Spinalis, and on the Excito-motory System of Nerves.* These papers are printed in the "Memoirs of the Nervous System," already noticed.

To the Transactions of the Royal Medico-chirurgical Society, Dr. Hall has furnished five papers:—

1. (Vol. X, p. 166.) *A Case of Chronic Inflammation of the Larynx, in which Laryngotomy and Mercury were successfully employed.*

2. (Vol. XII, p. 1.) *Four Cases of Children who had Attempted to Drink Boiling Water from the spout of a Kettle.* This is, I believe, the first record of the effects of this singular accident, the seat of which is the glottis and larynx, not the œsophagus and stomach as may be at first supposed. Two of these cases died from suffocation; one was relieved by the operation of tracheotomy, but survived only thirty-four hours, dying from the exhaustion produced by the irritation occasioned by the primary affection; and one recovered from imminent suffocation immediately after violent screaming.

3. (Vol. XIII, p. 121.) *On the Effects of Loss of Blood.* The principles laid down in this paper are more amply illustrated in the separate publications previously noticed.

4. (Vol. XIII, p. 189.) *Cases of Destructive Inflammation of the Eye, and of Suppurative Inflammation of the Integuments, occurring in the Puerperal State, and apparently from Constitutional Causes.* This paper was written in conjunction with Mr. Higginbottom. The cases have been since ascertained to depend upon phlebitis, a subject well illustrated by the labours of Dr. D. Davis, Dr. Robert Lee, Mr. Arnott, and others.

5. (Vol. XX, p. 250.) *An Experimental Investigation of the Effects of Loss of Blood.* This subject has been already adverted to.

To the Edinburgh Medical and Surgical Journal, Dr. Hall made nine contributions:—

1. (Vol. XI, p. 466.) *Case of painful Sub-cutaneous Tubercle.* This affection continued during twenty-two years, and was then relieved by excision of the part.

2. (Vol. XII, p. 11.) *Case of the Effects of Tobacco.* A young man unaccustomed to the practice, smoked one, and a part of a second pipe of tobacco, which produced very alarming symptoms—syncope, retching, &c. These continued for four or five days. The case bore the aspect of apo-

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plexy; but symptoms of paralysis were absent. By bleeding, blistering, &c. the case terminated favourably, but in a very gradual manner.

3—6. (Vol. XII, p. 423. Vol. XIII, pp. 63—189—303.) *Contributions to Diagnosis. 2nd ditto. Reflections on the Arrangement of Cutaneous Diseases; with the Suggestion of a Practical and Diagnostic mode of Classification. Third Contribution to Diagnosis.* These are embodied in Dr. Hall's work on Diagnosis.

7. (Vol. XV, p. 547.) *On a peculiar Species of Gangrenous Ulcer, which affects the Face in Children.* This occurs principally to females in the winter season, and to children who have suffered from fever, derangement of the Digestive Organs, &c.

8. (Vol. XVI, p. 62.) *Case of a peculiar Eruptive Disease.* A variety of Herpes.

9. (Vol. XVI, p. 204.) *On the Acceptation of the term Scorbutus, and on the Prevalency of this Affection at Different Periods.* This subject is treated of in Dr. Hall's Essay on the Mimoses.

To the Cyclopædia of Practical Medicine, Dr. Hall furnished the articles *Abstinence, Anæmia, Morbid States of the Blood, Blood-letting, Chlorosis, and Symptomatology.* The previous notices of Dr. Hall's works will show his fitness for the composition of these essays.

The various publications, of which I have thus endeavoured to give to the reader some idea, and the nature of which displays Dr. Hall's powers for research and original observation, is the best testimony I can offer to his talents and zeal. In the prosecution of his views he still continues to labour, and I doubt not that the results will be favourable to his reputation. His services to the profession are not, however, limited to the diffusion of his opinions through the medium of the press, for he has been, and is still, engaged in the instruction of a very respectable medical class. He commenced as a lecturer on the Theory and Practice of Medicine, in the Medical School in Aldersgate-street in the session of 1834-5, and he delivered regular courses during that and the following session. He afterwards lectured at the Webb-street School, in 1837-8 and 1838-9, and he assisted to form a Medical School in the neighbourhood of the University College, to which the name of Sydenham College has been given. His lectures have been reported in the Lancet, and the introductory to two courses have been separately printed, one of which is dedicated to his friend, M. Louis, physician to the Hôtel Dieu, of whose talents as a clinical physician Dr. Hall entertains the highest opinion.

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WILLIAM HARVEY, M.D.

&c. &c. &c.

"The circling streams, once thought but pools of blood,
(Whether life's fuel, or the body's food)
From dark oblivion HARVEY's name shall save."

So wrote Dryden. The DISCOVERY OF THE CIRCULATION OF THE BLOOD constituted a new era in medical science, and has justly conferred immortality on its author. If we are to estimate the importance of a part by its necessity to the human frame, the heart with its system of vessels must hold the highest place, as the loss of it insures the immediate death of the animal, which ensues not even with the removal of the brain itself. It is the first part of organization that appears, and all the other parts of the body are dependant upon it for their growth and development. Acephalous fœtuses proceed to the full period of gestation, and, upon birth, are not found to be diminutive in size, or disproportionate in any other parts of the body. I must not, however, anticipate my subject; but, in accordance with the plan hitherto pursued, embody the discoveries of Harvey in a brief sketch of the life of the illustrious physician.

WILLIAM HARVEY was born at Folkstone, in Kent, April 2, 1578. His family was of great respectability. At ten years of age he was sent to the grammar school of Canterbury, and at fourteen transferred to Caius College, Cambridge, where he was admitted a pensioner, May 31, 1593. He studied at the university during five years, after which he travelled through France and Germany, and then fixed himself at Padua, a place celebrated for its medical school. Here he studied under the most renowned teachers, particularly Hieronymus Fabricius de Aquapendente, who built an anatomical theatre at Padua, which remains, and is shown to strangers, at this day. It is remarkable for almost totally excluding the natural light, the circular seats rising up above each other almost perpendicularly. The wainscot is

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of oak, curiously carved; but now blackened by the hand of time. The lectures by Fabricius must have been given by candle-light. Under this most distinguished teacher, Harvey learnt of the existence of the valves in the veins, and this may be justly considered as the first step in his establishment of the physiology of the circulation. He graduated at Padua, April 25, 1602. Having obtained his degree, he returned to England, was incorporated at Cambridge, and commenced the practice of his profession in London. He was admitted a candidate of the London College in 1604, and in 1607 elected a fellow. He was also appointed one of the physicians to St. Bartholomew's hospital, succeeding Dr. Wilkinson; and in 1615 he was chosen professor of anatomy and surgery in the college, where, in 1616, he first developed his discovery of the circulation of the blood. No printed account of it was, however, put forth until 1628. This appeared at Frankfort, and was dedicated to Charles I. There is a second dedication to the college of physicians, in which the author alludes to the declaration of his doctrine made in the anatomical lectures, and the defence he had made of his opinions by reasons and arguments founded upon ocular demonstration, against the objections which had been raised to them. Few doctrines have met with greater opposition than those which relate to the circulation of the blood. Jealousy is the parent of detraction; and, it is therefore not surprising that Harvey should have been an object of attack. Indeed, we learn from his own statement, and a variety of authorities, that he suffered severely by the promulgation of his doctrine. One states, that "in the eyes of his contemporaries he was looked upon only as a dissector of insects, frogs, and other reptiles." The old physicians believed, that in the practice of medicine there was nothing to be attained beyond what the ancients had already acquired; and they died in the full enjoyment of their ignorance. Dr. Johnstone truly observes, that "Physicians of a certain reputation have little to gain, and may lose much. It is shocking that works of great merit have had this misfortune, and that Harvey lost patients by his works." When Sir George Ent urged Harvey to print his Experiments and Discoveries on the subject of Generation, Harvey replied, "You are not ignorant of the great troubles my lucubrations, formerly published, have raised! *Nósti, quantum turbarum pristinæ meæ lucubrationes concitaverint.* Aubrey reports he heard him say, "that after his booke of the Circulation of the Blood came out, he fell mightily in his practice," and he adds, "'twas believed by the vulgar, he was crack-brained; and all the physicians were against his opinion, and envyed him." Harvey, however, had the satisfaction to see his doctrine received and established. The learned Hobbes, who calls phy-

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sicians the only true natural philosophers, says, "The science of man's body, the most profitable part of natural science, was first discovered with admirable sagacity by our countryman, Dr. Harvey, principal physician to King James and King Charles, in his books of the *Motion of the Blood*, and of the *Generation of Living Creatures;* who is the only man I know, that conquering envy, hath established a new doctrine in his life-time." Yet the labour and application of twenty-five years were requisite to ensure the reception of his opinions.

It is not a little interesting to have discovered the means, as it were, by which Harvey illustrated his lectures. At the museum of the Royal College of Physicians, there are to be seen six diagrams, (if they may be so termed,) displaying on large boards, of the size of the human frame, the complete system of the blood-vessels separated from the other parts of the body. They constitute tabular views of the circulating system; and so carefully have these been made, that one of them demonstrates even the semilunar valves which are found at the origin of the aorta. These tables were presented to the college by the earl of Winchelsea, who is the direct descendant of the Lord Chancellor Nottingham, who married a niece of Dr. Harvey, and they were carefully preserved at Burleigh on the Hill.

It may interest the general, and not be useless to the professional, reader, to have the chief points relating to the circulation succinctly brought into view, duly to estimate the value of Harvey's discovery:—The heart is situated in the thorax, inclining to the left side, enclosed within a capsule fixed to the spine by its large vessels and the reflexions of the membrane of the chest. The organ itself is muscular, and this structure varies in the different sides of the heart, and is so disposed as to form cavities which communicate with each other in a particular way, and one side appears to be perfectly distinct from the other. The cavities and parts attached to them show that they are fitted to receive, and to propel the blood which is contained within them, and a double circulation of this fluid seems to be essential. The right side is the pulmonic heart, and transmits the blood received from all the veins of the body to the lungs, there to undergo an alteration which is effected by the process of respiration. This accomplished, it is fitted for the general or aortic circulation, it is freed of that which is noxious to the system, and rendered competent to the supply of matter for growth, nutrition, and secretion. By the left side it is transmitted to every part of the frame. This is a general statement of the parts concerned in the circulation, and the order in which it is to be traced. Now as to the uses of the several parts:—The first thing that strikes us in looking at the heart is, the difference in the size of the ventricles compared

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with the auricles, and the greater thickness of the former compared with the latter. It is evident from this structure that the auricles are to be looked upon chiefly in the light of receptacles or reservoirs for the blood, and endowed only with a slight muscular structure sufficient to enable them to controul and allow the blood to pass into the ventricles beneath them. The large veins enter into the right auricle, and every provision is found readily to receive the fluid they bring; but once received, not to allow of its return. At the entrance, therefore, of the two large vessels, the *cavæ*, there is a mechanism corresponding to this purpose. The *superior* is so arranged that the fluid is directed properly into the auricle, and the *inferior* has a valve (the Eustachian) to prevent any regurgitation of blood from the auricle. A similar kind of valvular apparatus is found at the orifice of the coronary vein. Now, the auriculo-ventricular opening is also specially guarded to preserve undisturbed the circulation: it has also a valvular apparatus; but of a more complicated nature, commencing from the tendinous zone, formed of a tendinous expansion of three flaps, admitting the blood to pass from the auricle into the ventricle during the dilatation of that part, and at the same time preventing it from passing into the pulmonary artery which arises from this cavity. The structure of this valve is beautiful—it readily allows the fluid to enter from the auricle to the ventricle in its dilatation; but in the contraction, there would be danger of the valve being driven back into the auricle, unless some contrivance to prevent this should exist, and this is found in the attachment of the tendinous cords to the apices of the fleshy pillars, which allow the valve only to proceed to a certain distance, and this in the healthy state extends only to the mouth of the opening. Thus the blood passes from the auricle to the ventricle in the manner I have described, and this latter cavity has to transmit its contents from the right side of the heart to the lungs. Here we find power is requisite to drive it along, and therefore more muscularity is observable in the ventricle than in the auricle. The pulmonary artery too, arises at the upper part of the ventricle which renders more effort necessary than if it were placed at any other part of the cavity. The arrangement of the muscular fibres of the ventricle are both fixed and loose; the fixed give the contraction of the entire part, the loose regulates the internal machinery to preserve the course of the circulation. The fibres for the general contraction of the ventricle are (as professor Vauss has shown) principally in a spiral direction, and can act so as to empty the ventricle completely—the valvular apparatus at the auriculo-ventricular opening having closed that communication, the contraction of the ventricle can only drive the blood into the pulmonary artery—this it does; and here, at the orifice

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of this artery, is another beautiful contrivance in the arrangement of the three semilunar valves, formed by the duplicature of the inner coat of the vessel itself, and so arranged as to close completely the vessel after the blood has been driven into it. Their concavity is towards the heart, and they are rendered perfect and stronger in their action by small bodies, one of which is situated in the centre of each valve, the *Corpora Sesamoidea*, and they effectually close the opening. The blood thence passes into this vessel through the lungs, and is returned by veins, two from each lung, to the other, the left side of the heart—the aortic or systemic heart.

The left auricle is not quite so capacious as the right, and as the veins do not terminate in it in the same manner as the cavæ of the right, there is no need of a valvular apparatus; but the opening from the auricle to the ventricle requires this structure, and it is formed similar to the right, except that the tendinous expansion consists of two, instead of three flaps. By an arrangement of tendinous cords and fleshy pillars, it acts in the same way as I have described as belonging to the right; and the auricle and the aorta are equally protected. But, as more power is requisite to transmit blood to a greater than a lesser distance, so we find this left side of the heart much more muscular than the right: it may be said to be three times as thick. The aorta is also stronger than the pulmonary artery. Semilunar valves protect the entrance of the aorta, just the same as the pulmonary artery. The forces of the current of blood is broken by the force of the great vessel, where a number of branches are sent off to different parts of the body. Thus then is the circulation established.

To those who are anxious to know the various fanciful and chimerical opinions entertained by anatomists of former times regarding the motion of the blood, I refer them to Senac's *Traité du Cœur*. That the blood was constantly in motion, all seemed sensible of, but of the agents in this affair they appeared to be ignorant; for the arteries being, after death, found empty, they were considered to be for the purpose of conveying *air only*—hence their name arteries. Servetus, who lived in the early part of the 16th century, appears to have had more correct notions of the circulation, and in 1553 he published a work entitled *Christianismi Restitutio*, of which I have given a particular account in the memoir of Dr. Sigmond, who has paid deserved attention to the medical theories of Servetus. The passages in the work of Servetus, which relate to this subject, are as follow :—

Ad quam rem est prius intelligenda substantialis generatio ipsius vitalis spiritus, qui ex aëre inspirato, et subtillissimo sanguine componitur et nutritur. Vitalis spiritus in sinistro cordis ventriculo suam originem habet,

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juvantibus maxime pulmonibus ad ipsius generationem. Est spiritus tenuis, caloris vi elaboratus, flavo colore, ignea potentia, ut sit quasi ex puriori sanguine lucidus vapor, substantiam in se continens aquæ, aëris, et ignis. Generatur ex facta in pulmonibus mixtione inspirati aëris cum elaborato subtili sanguine, quem dexter ventriculus cordis sinistro communicat. Fit autem communicatio hæc non per parietem cordis medium, ut vulgo creditur, sed magno artificio a dextro cordis ventriculo, longo per pulmones ductu, agitatur sanguis subtilis: a pulmonibus præparatur, flavus efficitur: et a vena arteriosa, in arteriam venosam transfunditur. Deinde in ipsa arteria venosa inspirato aëri miscetur, exspiratione a fuligine repurgatur. Atque ita tandem a sinistro cordis ventriculo totum mixtum per diastolem attrahitur, apta supellex, ut fiat spiritus vitalis.

Quod ita per pulmones fiat communicatio, et præparatio, docet conjunctio varia, et communicatio venæ arteriosæ cum arteria venosa in pulmonibus. Confirmat hoc magnitudo insignis venæ arteriosæ, quæ nec talis, nec tanta facta esset, nec tantam a corde ipso vim purissimi sanguinis in pulmones emitteret, ob solum eorum nutrimentum, nec cor pulmonibus hac ratione serviret: cum præsertim antea in embryone solerent pulmones ipsi aliunde nutriri, ob membranulas illas, seu valvulas cordis, usque ad horam nativitatis nondum apertas, ut docet Galenus. Ergo ad alium usum effunditur sanguis a corde in pulmones hora ipsa nativitatis, et tam copiosus. Item a pulmonibus ad cor non simplex aër, sed mixtus sanguine mittitur, per arteriam venosam: ergo in pulmonibus fit mixtio. Flavus ille color a pulmonibus datur sanguini spirituoso, non a corde. In sinistro cordis ventriculo non est locus capax tantæ, et tam copiosæ mixtionis, nec ad flavum, elaboratio illa sufficiens. Demum, paries ille medius, cum sit vasorum et facultatum expers, non est aptus ad communicationem et elaborationem illam, licet aliquid resudare possit.

Ille itaque spiritus vitalis, a sinistro cordis ventriculo, in arterias totius corporis deinde transfunditur, ita ut qui tenuior est, superiora petat, ubi magis adhuc elaboratur, præcipue in plexu retiformi, sub basi cerebri sito, in quo ex vitali fieri incipit animalis, ad propriam rationalis animæ sedem accedens. Iterum ille fortius mentis ignea vi tenuatur, elaboratur, et perficitur, in tenuissimis vasis, seu capillaribus arteriis, quæ in plexibus choroidibus sitæ sunt, et ipsissimam mentem continent.

"To this purpose, the first thing to be understood is the substantial generation of the vital spirit itself; which is composed of, and nourished by, the inspired air, and the most subtle blood. The vital spirit has its origin in the left venticle of the heart, the lungs greatly assisting in its generation. It is a subtle spirit elaborated by the force of heat, of a

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bright (flavo) colour, with an igneous power, a lucid vapour as it were, from the purest blood, containing in itself the substance of water, air, and fire. It is generated by a mixture made in the lungs of the inspired air, with the double elaborated blood which the right ventricle of the heart communicates to the left; but this communication is not made through the middle partition (septum) of the heart, as is commonly believed; but the subtle blood is agitated or moved in a highly artificial manner, from the right ventricle of the heart, in a long duct through the lungs: it is prepared and made bright by the lungs, and transfused by the arterial vein to the venal artery; then it is mixed with the inspired air in the venal artery, and cleansed from grossness by expiration: and thus the whole mixture is finally drawn from the left ventricle of the heart through the diastole, a suitable apparatus, that it may be made the vital spirit.

"The varied conjunction and communication of the venal artery with the arterial vein in the lungs, show that the communication and preparation are thus made by the lungs: the great capacity of the venal artery confirms this: it would neither have been made in such form and magnitude, nor could it emit such a power of the purest blood from the heart into the lungs, solely for their nourishment, nor could the heart be subservient to the lungs for this purpose, particularly as the lungs themselves, while in embryo, were accustomed to receive their nourishment from elsewhere, for those small membranes or valves of the heart are never opened, as Galen shows, till the time of birth; therefore, the blood is poured, and so copiously, from the heart into the lungs, at the very time of the birth, for some other use. It is also not simply air, but air mixed with blood, that is sent from the lungs to the heart through the arterial vein; therefore the mixture is made in the lungs. The bright colour is given to the sanguine spirit by the lungs, not by the heart: in the left ventricle of the heart the space is not capacious enough for so copious a mixture, nor is the elaboration there sufficient to produce the bright colour. Moreover, as the middle partition is deficient of vessels and faculties, it is not adapted to that communication and elaboration, although something may possibly exude through it.

"The vital spirit, therefore, is afterwards transfused from the left ventricle of the heart into the arteries of the whole body, so that the finer part may seek the superior place where it is yet further elaborated, especially the retiform plexus, situated at the base of the brain, in which, from the vital, it begins to be the animal spirit, approaching to the proper seat of the rational soul: it is again refined, elaborated, and perfected, by the igneous force of the more powerful mind, in the very slender vessels or capillary arteries which are situated in the choroid plexuses, and contain the very mind itself."

Thus far Servetus:—The Italian anatomists Colombo, and Cæsalpini, also entertained opinions as to the transit of the blood through the lungs, where they conceived it to be acted upon by the air; but to Harvey is unquestionably due the merit of one of the greatest discoveries that has ever been made in anatomical or physiological science. Attempts have been made (by Grosier) to prove that the Chinese were the earliest people having an acquaintance with the true nature of the circulation of the blood; but this author has not cited any authority in support of his assertion. The minute attention paid by the Chinese to the pulse, may readily have given rise to such an opinion, which, however, has no foundation

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in truth. In the work of Nemesius, bishop of Emessa, in Phœnicia, Περι Φύσεως Ανθρωπου, on the Nature of Man, which has passed through so many editions, passages occur in which the learned editor of the Oxford edition presumes to see the doctrine of the circulation. Various others appear to have been on the confines of the discovery, but yet not to have made it. Mundinus, a native of Milan, who flourished in the early part of the 14th century, and who first gave engravings of anatomical subjects, observed the valves of the large vessels of the heart, and obscurely hints at their probable office. The claims of Servetus are certainly greater than those of any preceding him, and his observations were improved upon by Colombo and Cæsalpini. *(See Questiones Peripateticæ, lib. IV.)* Servetus, I have already shown in the preceding extracts, understood the nature of the pulmonic circulation, the manner in which the blood circulated from one ventricle of the heart to the other, before it was transmitted through the general system. Being acquainted with so much, it is rather astonishing that he did not proceed further, and have thus wrested the glory of the perfect discovery from Harvey.

In various biographical sketches of Harvey, it is stated that the MS. of his lectures, delivered at the College of Physicians, in 1616, and containing the first notices of his doctrine, is to be found in the Sloane collection, deposited in the British Museum. I have made particular search for these lectures, with the kind assistance of Sir F. Madden, the keeper of the MSS., but in vain. There is no such manuscript. A volume (No. 486) contains, apparently, notes of lectures on the muscles and nerves; but nothing relating to the circulation. Sir H. Sloane marks the volume as belonging to Harvey; and from the character of the writing, it is likely to be his production. Aubrey says "he wrote a very bad hand, which, with use, I could pretty well read." All Harvey's MSS. were destroyed, either by the pillage of his apartments at Whitehall, or by the great fire of London. The autograph of Harvey is very rare. Dawson Turner, Esq. of Yarmouth, possesses one in an Album. The fac-simile attached to the Portrait accompanying this Memoir, is from a "Liber Computorum" attached to a Bursar's Account, passed in the year 1645, in Merton College. The hand-writing of the volume numbered 486, corresponds with this signature, but not with another MS. of the Sloane Collection (No. 1055), which, by Sloane, is marked as Harvey's *Diarium Medicum*. This consists of a great number of prescriptions given to different individuals, whose names are mentioned, and whose diseases are also specified. One nobleman only figures in this list, the Lord Maudingham, which is very unlikely to be the case in the practice of the court physician. The dates are irregular, but

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they extend from 1638 to 1651. The writing is clear and distinct, and very dissimilar to that of No. 486, which I have compared with some writing that is unquestionably Harvey's, in the College of Physicians, as it is marked "Money dew out the Exchequer for *my pension*, 21 April, 1642."

Although the MS. of his lectures is not to be found, it is nevertheless clear that Harvey brought the subject before the College several years prior to printing his account of it, which was not published until 1628, at Frankfort, in a small quarto volume, of seventy-two pages, and which may well be described as "a little book, but full; and great enough, if men count well for great." Haller calls it *Opusculum Aureum*. The work is entitled *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*. There are two dedications, one to King Charles, the other to the College of Physicians. In the latter the author alludes to the demonstration of his doctrine made in the lectures delivered by him before the College for more than nine years: *Meam de motu et usu cordis, et circuitu sententiam, E. D. D. antea sæpius in prælectionibus meis anatomicis aperui novam: sed jam per novem et amplius annos multis ocularibus de monstrationibus in conspectu vestro confirmatam, rationibus et argumentis illustratam, et ab objectionibus doctissimorum et peritissimorum anatomicorum liberatam, toties ab omnibus desideratam, a quibusdam efflagitatam, in lucem et conspectum omnium hoc libello produximus.* It was the result of various experiments, made chiefly upon living animals, and in the presence of credible and competent witnesses; and the results deduced from these experiments are stated with a precision and a modesty highly deserving of commendation. In the ninth chapter he advances his proofs of the circulation, in the following concise manner:—

Primo, continue et continenter sanguinem e vena cava in arterias in tanta copia transmitti pulsu cordis, ut ab assumptis suppeditari non possit; et adeo ut tota massa brevi tempore illinc pertranseat: secundo, continue, æquabiliter, et continenter sanguinem in quodcunque membrum et partem pulsu arteriarum impelli et ingredi, majori copia multo quam nutritioni sufficiens sit, vel tota massa suppeditari possit: et similiter tertio, ab unoquoque membro ipsas venas hunc sanguinem perpetuo retroducere ad cordis locum. His positis, sanguinem circumire, revolvi, propelli et remeare, a corde in extremitates, et inde in cor rursus; et sic quasi circularem motum peragere; manifestum puto fore.

First, that the blood is continually, and without intermission, transmitted out of the vena cava into the arteries, in so great abundance, that it cannot be recruited by those things

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we take in, and insomuch that the whole mass of blood would quickly pass through. In the second place, that continually, duly, and without cessation, the blood is driven into every member and part, and enters by the pulse of the arteries, and that in far greater abundance than is necessary for nourishment, or than the whole mass is able to furnish. Thirdly, that the veins themselves do perpetually bring back this blood into the mansion of the heart.

"Those things being proved, I think it will appear that it doth go round, is returned, thrust forward, and comes back from the heart into the extremities, and thence into the heart again, and so makes as it were a circular motion."

Later anatomists and physiologists may be said to have completely illustrated Harvey's discovery, which, it will be seen, is more especially confined to the mechanism of the parts concerned in the circulation. The knowledge of the vital properties of the system, and its application to the organization, have served to display the importance of the discovery, both as to the growth and support of the body, and of its condition under disease. Harvey was ignorant of the contractile power of the arteries. Contractility is the characteristic of the muscular fibre—the heart is a muscular organ, and this property is possessed by it in its full degree. By this power the muscles obey the commands of their proper stimulus, the blood, contract and propel it from one cavity to another, and thus the circulation is accomplished. The heart is furnished with nerves: the ganglial are distributed to its texture, and the functions of the part may justly be considered as more immediately under their influence; but we find the organ to be also subject, though in a minor degree, to the cerebro-spinal system; and it may be remarked generally, that the more perfect the animal appears to be in its organization, the more immediate this connexion appears to subsist. In man it is more remarkable than in any other being; and the manner, therefore, in which the heart is influenced by cerebral operation, is more distinctly and unequivocally manifested. The heart is able, however, to perform its functions independently of any connexion with the brain, as we find in the experiments of Sir B. Brodie, Dr. Philip, M. Magendie, and others, and, as we observe, more especially in the acephalous fœtuses. The sensibility of the heart is of a low degree: it has been rendered sensible to the eye and to the touch, in the living state in some extraordinary operations, and the effect of the impression has been found to be very slight indeed. It cannot be said to be under the influence or control of the will; if it were so, how could life be sustained? what would be the condition during sleep? it would be the sleep of death! Notwithstanding this, the physical condition of the heart appears to be very subservient to our moral feelings and emotions; and palpitation of the organ, and all the concomitants of irregular action, are to be detected upon any excitement of the feelings or passions.

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Of the vital properties of the blood-vessels, and the part they perform in the circulation of the blood, much controversy has arisen. The earlier anatomists regarded the arteries simply as hydraulic tubes, whilst the moderns look upon them as vital parts endowed with the properties of living matter, and forming parts of an organized system. Physiologists are, at the present day, much divided in opinion as to the precise amount of vital property with which the vessels are furnished—the degree of contractility possessed by them being variously estimated. They are parts not under the control of the will—their sensibility is known to be in a very low degree. The great question of dispute has been grounded upon the muscularity of the arteries, and the part this structure enables them to perform in the great purpose of the circulation. Haller advocated the muscularity of the arteries. Whytt and Senac equally favor the contractility of the arteries. Cullen, improving upon the doctrines of Stahl and Gorter, and applying to these the aids of modern physiology, established his system of pathology, based on the action of the vessels. From the experiments of Hunter, Hewson, Thomson, Parry, Philip, Hastings, and others, it would appear that the elasticity of the arteries is greatest in the larger trunks, and the contractility in the minute branches, or that set known as the capillaries. As the muscular fibres of the arteries are more distinctly to be observed in the smaller than in the larger branches, the circulation has been conjectured to be carried on in the first part principally by the power of the elastic coat, and in the latter by the agency of the muscular. In the extreme branches constituting the capillary, it is found that the tunics of the vessels are almost entirely muscular; and this structure some physiologists conceive sufficient to account for the contraction of a small branch of an artery upon being divided, and also the admission of a large quantity of blood into its channels, upon any mental emotion, as we observe in the act of blushing.

Harvey left the termination of the arteries in the veins undetermined, as his experiments did not sufficiently elucidate the mode of connexion between them. The art of injecting, it must be remembered, was unknown in his day. Harvey was fifty years of age when he published his work on the circulation. He had previously enjoyed much reputation, as must be evident from his being appointed Professor of Anatomy and Surgery at the College. He was also physician to King James. King Charles took much interest in the physiological researches of Harvey, and witnessed several of his experiments. He appointed him his physician in 1632. In 1633 Harvey accompanied Charles and his court to Scotland, and there made an excursion to the Bass Rock, in the Frith of Forth, of which he has given a very picturesque description, and an account of the prodigious number of Solan Geese, and other wild fowl, which are there to be met with at certain seasons.

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In 1635, died Thomas Parr, celebrated for his extraordinary longevity. The king commanded Harvey to make a dissection of his body, and the account is to be found in the Philosophical Transactions (Vol. III, p. 886), and in the college edition of his works.

Adhering to the fortunes of his royal master, Harvey accompanied the king to the battle of Edge-hill, in 1642, and Aubrey says that, "during the fight the prince and duke of York were committed to Harvey's care." He says that he told him he withdrew with them under a hedge, and took out of his pocket a book and read; but he had not read very long, before a bullet of a great gun grazed on the ground near him, which made him remove his station. He afterwards attended the king to Oxford, and was incorporated M.D. at the university, December 7, 1642. Three years subsequent to this, he was, by the royal mandate, elected warden of Merton college, in the room of Dr. Nathaniel Brent, who had quitted the university and taken the covenant; but in 1646, upon the surrendering of Oxford (July 24) to the parliament, he quitted the college and came to London, where he resided with his brother Eliab, a rich merchant, living in the Poultry, and occasionally at Roehampton. Previous to his appointment to Merton college, he accompanied the earl of Arundel and Surrey, then lord high marshal of England, in an embassy to Vienna. Of this journey, Aubrey has given some particulars. He says that he was told by one of the ambassadors' gentlemen, Mr. William Hollar, the celebrated artist, "that in his voyage, he would still be making of excursions into the woods, making observations of strange trees, and plants, earths, &c., and sometimes like to be lost. So that my lord ambassador would be really angry with him, for there was not only danger of thieves, but also of wild beasts."

Harvey's place at St. Bartholomew's hospital was filled during this time by Dr. Smyth, and upon his return, in consideration of his engagements at court, an assistant in the person of Dr. Andrews was appointed; and Harvey was permitted to receive the emoluments of the office, without the performance of the duties attached to it.

During his stay at the University of Oxford, Harvey performed many experiments, and made many researches into the subject of Generation; and he also wrote a small book against the celebrated Riolan, in defence of his work on the Circulation:—*Exercitationes Duæ Anatomicæ de Circulatione Sanguinis: ad Joannem Riolanum filium, Parisiensem.* This work appears to me to be one of the ablest publications of Harvey; and the doctrine of the circulation, and the facts in support of it are put forth in a very lucid manner. It displays also the temper and mind of the author, who eulogizes Riolan, calls him *anatomicorum coryphæum*, says his book, *i. e.* his anatomy,

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will outlive all memory, &c. *Vivat in æternum celebris libellus, nominisque tui gloriam, (pereunte etiam marmore) posteris enarrabit.* In the second exercitation he makes strong allusion to the fate of his own work. He says, that since the publication of his discovery, scarcely a day has past that he has not heard both good and evil of his doctrine: some rail at it as a tender baby, unworthy to see the light; others that it deserves to be fostered and his writings defended; some, with great disdain, oppose them; others, with mighty applause, protect them; some say that he has abundantly confirmed the circulation of the blood against all his adversaries; whilst others think them as yet but insufficiently illustrated. But, (he adds) there are those who cry out that I have affected a vain commendation in dissection of living creatures, and do with childish slighting dispraise and deride at frogs and serpents, gnats, and other more inconsiderable creatures brought upon the stage, and refrain not from ill language. But I think it a thing unworthy of a philosopher, and a searcher of the truth, to return bad words for bad words; and I think I shall do better, and more advised, if with the light of true and evident observations, I shall wipe away those symptoms of incivility. Harvey's defence of the investigation of the lower animals is beautiful: If you will enter with Heraclitus in Aristotle into a work-house (for so I call it), for inspection of viler creatures, come hither, for the immortal gods are here likewise; and the great and Almighty Father is sometimes most conspicuous in the least and most inconsiderable creatures." *Ad viliorum animalium inspectionem, cum Heraclito apud Aristotelem, in casam furnariam (sic dicam) introire si vultis, accedite; nam neque hic Dii desunt immortales. Maximusque Omnipotens Pater in minimis, et conspectior vilioribus, quandoque est.* He ridicules those who refer to the agency of spirits for the explanation of the phenomena of the circulation, and says, it is no wonder if spirits, whose nature is left so doubtful, do serve for a common escape to ignorance: for commonly ignorant persons, when they cannot give a reason for any thing, say that it is done by spirits, and bring in spirits as performers in all cases; and like bad poets, do bring in the gods upon the scene by head and ears, to make the *exit* and *catastrophe* of their play.

Aubrey states that Harvey travelled into Italy, in 1649, in company with Dr. Ent; but this is doubtful. It is certain that he secluded himself at Combe, in Surrey, where Aubrey says "he had a good air and prospect, and had caves made in the earth, in which, in summer time, he delighted to meditate." Aubrey also reports, that about 1654, Eliab Harvey purchased Cockaine-house, which was, in 1680, the excise office; that it was "a noble house where the doctor was wont to contemplate on the leads,

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and had his several stations in regard of the sun or wind. He did delight to be in the darke, and told me he could then best contemplate."

In 1651, Harvey was visited by Dr. Ent, at Combe, and this physician prevailed upon him to allow of the publication of his work on Generation. It was published in the same year, and entitled *Exercitationes de Generatione Animalium.* It is the result of various observations and experiments made during a series of years, and eminently characteristic of the mind of its author, and his great powers of investigation. The work would, however, have been much more ample, but for the loss of his papers during the rebellion. His residence at Whitehall had been plundered, and his MSS. destroyed, by which the notes of many experiments were consigned to oblivion. During his stay at Oxford, he availed himself of the leisure he possessed, to bring together many observations; yet he never failed to deplore the papers that were lost. He was assisted in his researches relative to the development of the chick, by the Rev. George Bathurst, D.D. of Trinity College, in whose chambers, it is said, many of the experiments were made. In the preface to this work, Dr. Ent says that he found him in his retirement with a sprightly and cheerful countenance, investigating, like Democritus, the nature of things. Then ensues the following colloquy: asking if all were well with him, "How can that be," he replied, "when the state is so agitated with storms, and I myself am yet in the open sea? And, indeed, were not my mind solaced by my studies, and the recollection of the observations I have formerly made, there is nothing which should make me desirous of a longer continuance. But thus employed, this obscure life, and vacation from public cares, which disquiet other minds, is the medicine of mine." Ent possessed himself of Harvey's papers, and, with his permission, submitted them to the press. It is not necessary here further to specify this work, than by saying that amidst numerous observations, Harvey appears to have been the first to point out the origin of the chick from the *cicatricula* of the ovum, and he stated the *punctum saliens* to be the heart.

In 1653 Harvey displayed the most liberal spirit towards the College of Physicians. He offered to Dr. Prujean, the President of the College, to build a library and a museum, and to present them to the body of which he was so illustrious a member. The College received the proposal in a proper spirit, and voted the erection of a marble statue of Harvey, in his doctorall robes, to be placed in their hall, with an inscription recording his great generosity, and the immortality his works had obtained for him. In 1653 the building was perfected, and Harvey invited his colleagues to a splendid entertainment. The doors of the museum, in which were displayed nu-

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merous objects of interest, were thrown open, and the mansion and its contents presented to him by the College. Harvey was now seventy-five years of age, and he resigned his professorship of anatomy and surgery, and was succeeded by the celebrated Glisson. The building given by Harvey to the College, is described by Aubrey as a noble edifice, of Roman architecture (of rustic work, with Corinthian pilasters), and consisted of an elegantly furnished convocation-room, or parlour, below, and a library, filled with choice books and surgical instruments, above; it was erected in the garden of the College of Physicians (in Amen Corner), which was of an irregular form, extending as far as the Old Bailey to the west, and towards the south reaching the church of St. Martin, Ludgate; and the museum must have stood near the spot upon which Stationers' Hall has since been built. On the outside, on the frieze of the edifice, was the following inscription, in letters three inches long—*Suasu et cura Fran. Prujeani, Præsidis, et Edmundi Smith, Elect. Inchoata et Perfecta est Hæc Fabrica. An. MIↃCLIII.* In the succeeding year the members of the College, animated by a desire further to manifest their respect for Harvey, elected him to the presidency of the College, vacant upon the resignation of Dr. Prujean; and two of the elects, Drs. Alston and Hamey, waited upon him to communicate the same. He was much gratified by this mark of attachment; but, on account of his age and infirmities, he respectfully declined the honour, and recommended the re-election of Dr. Prujean, which was unanimously adopted. The Portrait which accompanies this Memoir, is taken, by the kind permission of the President and Fellows, from a painting by C. Jansens, in the library of the College of Physicians.

In 1656 he conferred still further benefits on the College, by assigning to it his paternal estate of £56 *per annum*, in perpetuity, to institute an annual oration in commemoration of the benefactors to the College, a gratuity to the orator, and a provision for the keeper of the library and museum. Hence originated the well-known Harveian Oration, many of which have been published, and are no less distinguished by the acquaintance with medical science they display, than the testimonies they afford to the high classical attainments of the respective orators.

Harvey's frame, which was not robust, began now to bend under the weight of years and disease. He had suffered much from gout, and his method of treating himself has been described by Aubrey as follows:—"He would then sitt with his legges bare, if it were frost, on the leads of Cockaine House, putt them into a payle of water, till he was almost dead with cold, and betake himselfe to his stove, and so 'twas gone." And the same authority reports, that "he was hot-headed, and his thoughts working

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would many times keep him from sleeping. He told me, that then his way was, to rise out of his bed, and walke about his chamber in his shirt, till he was pretty coole, *i. e.* till he began to have a horror, and then return to his bed, and sleep very comfortably." He died on the 3d of June, 1657, but was not buried until the 26th, as appears by the annals of the College, as many of the Fellows of which as were able attended his remains to the grave. He was buried in a vault belonging to his family, built by his brother Eliab, at Hempstead, in Essex, where a handsome monument is erected to his memory. Aubrey attended his funeral, and says "hee helpt to carry him into the vault." That "he is lapt in lead, and on his brest, in great letters, Dr. William Harvey." This statement is perfectly correct, and Harvey's coffin is to be seen in the vault along with other members of his family. Its shape is curious; it resembles that of an Egyptian mummy, being of the human form without the appearance of the arms. It is entirely of lead; there is no wooden cover, and literally, on the breast, is the name of the deceased as described by Aubrey, with the addition of the date of his decease —"The 3d of June, 1657, aged 79 years." The letters in which the inscription is written, resemble those to be met with on various leaden pumps, cisterns, &c.

For twenty years before he died, Aubrey says that Harvey "tooke no manner of care about his worldly concerns, but his brother Eliab, who was a very wise and prudent manager, ordered all not only faithfully, but better than he could have done for himselfe." Some particulars relating to his death are recorded by Aubrey. He says "it is now fitt, and but just, that I should undeceive the world in a scandall, that I find strongly rumoured of him, which I have mett amongst some learned young men: viz. that he made himselfe away, to putt himselfe out of his paine, by opium; not but that, had he laboured under great paines, he had been readie enough to have donne it. I doe not deny that it was not according to his principles, upon certain occasions, to . . . . but the manner of his dyeing was really and *bonâ fide* thus, viz. the morning of his death, about ten o'clock, he went to speake, and found he had the dead palsey in his tongue; then he sawe what was to become of him, he knew there was no hopes of his recovery, so presently sends for his young nephews to come up to him, to whom he gives one his watch ('twas a minute watch, with which he made his experiments), to another, another remembrance, &c. He made sign to —— Sambroke, his apothecary, in Black-fryars, to lett him blood in the tongue, which did little or no good; and so he ended his dayes. The scandall aforesayd is from Sir Charles Scarborough's saying, that he had, towards his latter end, a preparation of opium, and I know not what, which

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he kept in his studye to take, if occasion should serve, to putt him out of his payne, and which Sir Charles promised to give him; this I believe to be true; but do not at all believe that he really did give it him. The palsey did give him an easie passeport."

He died possessed of £20,000, after having been in practice half-a-century, and a great portion of the time attached to the court. He left his property to his brother Eliab, and in his will he bequeathed to his old friend Mr. Thomas Hobbes £10, as a token of his love. "His practice," Aubrey says, "was not very great; towards his latter end, he declined it, unlesse to a speciall friend, e. g. my Lady Howland, who had a cancer in her breast, which he did cut off and seared, but at last she dyed of it." As a practitioner it is not possible now to pronounce an opinion of Harvey. His works are chiefly physiological. Aubrey says, "all his profession would allowe him to be an excellent anatomist; but I never heard any that admired his therapeutique way. I knew several practitioners in this towne (London), that would not have given three-pence for one of his bills (prescriptions), and that a man could hardly tell by one of his bills what he did aime at. He did not care for chymistry, and was wont to speak against them with undervalue." Aubrey says that Harvey "understood Greek and Latin pretty well, but was no critique, and he wrote very bad Latin. The *Circuitus Sanguinis* was, as I take it, donne into Latin by Sir George Ent, as also his booke *De Generatione Animalium;* but a little booke in 12mo., against Riolan (I thinke), wherein he makes out his doctrine clearer, was writt by himselfe, and that, as I take it, at Oxford." The same authority tells us that "he was pretty well versed in mathematiques, and had made himself master of Mr. Oughtred's *Clavis Math.* in his old age; and I have seen him (says he) perusing it, and working problems not long before he dyed, and that book was always in his meditating apartment. His chamber was that room which is now the office of Elias Ashmole, Esq., where he dyed. He was very communicative, and willing to instruct any that were modest and respectfull to him. He was not tall, but of the lowest stature; round faced, olivaster (like wainscott) complexion; little eie, round, very black, full of spirit; his haire was black as a raven, but quite white twenty years before he dyed. I remember he was wont to drinke coffee, which he and his brother Eliab did, before coffee-houses were in fashion in London. He was, as all the rest of the brothers, very cholerique; and in his younger days wore a dagger (as the fashion then was); but this doctor would be apt to drawe out his dagger upon every slight occasion. He rode on horseback with a foot-cloath to visit his patients, his man following on foot, as the fashion then was, which was very decent, now quite discontinued."

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WILLIAM HARVEY, M.D.

In the preceding pages I have noticed some of the most prominent of those who have been conceived to have entertained precise notions of the circulation of the blood, prior to the time of Harvey. No great discovery, it must be recollected, was ever perfected at once, or by the labours of a single individual. The researches of many are requisite, as steps of inquiry, leading to its complete development. It is not a difficult matter to trace in the writings of Plato, Aristotle, Hippocrates, Galen, Servetus, Cæsalpinus, and others, various passages which contain surmises applicable to the circulation; but in the writings of none of these is the true discovery of the whole system to be found. Harvey contemplated the whole, and brought it into operation. He made the application of his doctrine, and accurately exhibited the mechanism by which it was performed. From his doctrine emanated the introduction of mechanics into medicine, which, for a time, was the prevailing philosophy of the day, but destined, like other previous systems, to yield to more rational ones. (See Memoir of Boerhaave.) The errors of the mechanical philosophy are not to be regarded as detracting from the fame of Harvey. His opinions have been drawn from the legitimate deductions of experiment—upon experiment alone he placed his reliance, and cautiously excluded from his consideration that which could not be proved to be true.

It is unnecessary further to particularize the works of Harvey. The best edition of the *Exercitationes Anat. de Motu Cordis*, &c., is that of Leyden, in 4to., 1739, with a preface by Albinus. The book *De Generatione Animalium*, of Leyden, 1737, was also edited by Albinus. In 1766 the College of Physicians put forth, in a very handsome volume, a complete edition of Harvey's works, consisting of his Treatise on the Circulation, with the prefaces of the first edition of 1628; his Exercitations addressed to Riolan; his work on the Generation of Animals; the Account of the Dissection of Thomas Parr; and Nine Epistles of Harvey addressed to various persons; and a copy of the Diploma of Doctor of Medicine of the University of Padua. This edition was carried through the press, and corrected by the celebrated physician and poet Akenside; and a Life of Harvey, by Dr. Lawrence, is prefixed to it.

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SIR JAMES Mc GRIGOR, BART.

M.D. L.L.D., F.R.S., L. & E.

PHYSICIAN EXTRAORDINARY TO THE QUEEN,

&c., &c., &c.

"I am partial to Medicine as a Science, and I esteem mankind. As I value therefore the welfare of the one, I cannot but wish the improvement of the other."

WITHERS.

IN a former part of this work (the Memoir of Sir John Pringle, Bart.) I have taken the opportunity of making some remarks on the extraordinary neglect formerly evinced of a distinct consideration of the Diseases of the Army. The distinguished physician to whom I have alluded, is entitled to the merit of having been the first to draw particular attention to Military Medicine, and to lay the basis for future observers, than whom none stands more conspicuous than the very respected individual, the subject of the present memoir. What Sir John Pringle did upon a very limited scale, and confined to his own sphere of action, Sir James McGrigor has done upon a wide and extended field. To his own vast personal experience he has been able, from the honourable position to which he has most justly been elevated at the Army Medical Board, to add the information of others from all parts of the world, where the services of our brave soldiers have been demanded. The results of the inquiries projected by Sir James McGrigor, and carried on under his auspices, and now in the course of publication by Parliament, will be a lasting monument of his zeal for the service and for his profession, and prove a benefit of no mean valne to mankind.

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SIR JAMES M^cGRIGOR, BART. M.D., L.L.D., F.R.S. L. & E.

SIR JAMES M^cGRIGOR is a native of Cromdale, Strathspey, Inverness-shire, and was born in April, 1771. He is the son of Mr. Colquhoun M^c Grigor, a respectable merchant of Aberdeen, and Miss Grant, of Lithondy, both natives of Strathspey, Inverness-shire, North Britain. He received his education at the Marischal College, Aberdeen, where he took the degree of Master of Arts, having attended the instruction of those celebrated professors, Campbell, Beattie, and Hamilton. From Aberdeen he went to the University of Edinburgh, being destined for the medical profession, and he studied under professors Black, Monro, and Gregory. He also came to London to perfect his knowledge of anatomy, and attended the lectures and demonstrations of Mr. Wilson, in Windmill Street. He entered the army, in 1793, as surgeon of the 88th regiment, when the degree of Doctor of Medicine was conferred on him, by the Marischal College of Aberdeen. His commission he obtained by purchase, as was the custom in the service at that time. With his regiment, he accompanied the army on the continent, under H. R. H. the Duke of York; and, upon his return to this country, in 1796, his regiment was ordered to the West Indies, whither Dr. M^cGrigor accompanied it, serving under the celebrated Sir Ralph Abercrombie. From the West Indies, in 1800, he went to the East Indies, and proceeded to Egypt, as chief of the medical department of the Anglo-Indian army. He appears to have early manifested a desire to inform his profession upon all subjects relating to the health and efficiency of the army; and he submitted to the Medical Board, at Bombay, *a Memoir on the State of Health of the 88th Regiment, and of the Corps attached to it, from 1st June, 1800, to the 31st May, 1801.* This is not to be looked upon in the light of an ordinary report; for it is a compendium of a year's practice, not a mere statement of the numbers affected by any particular diseases, or the mortality occasioned by them. It takes a general view of the subject, and pays deserved attention to the state of the weather, as influencing or producing disease, and gives, likewise, the dissections of the fatal cases. The Meteorological Journals were most carefully kept. The memoir is printed in the Edinburgh Medical and Surgical Journal. (Vol. I. p. 266.)

Upon Dr. M^cGrigor's return to this country, he published, in 1804, *Medical Sketches of the Expedition to Egypt, from India.* This work offers a correct account of the diseases and mortality which occurred in the army, during the expedition to Egypt. It is framed upon original documents, drawn up by medical officers, and the observations of Dr. M^cGrigor made upon the spot. The author eulogises the devoted attention of the commander-in-chief General Sir David Baird, to the health and comfort

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of the soldier; and to his exertions he attributes much of the health enjoyed by the army. He is no less laudatory of the ability, conduct, and fortitude, of the medical officers. "Fortitude," he says, "is more a military than a medical virtue; but never was it more conspicuously displayed than by the medical officers on the breaking out of the plague."

The *Sketches* are divided into three parts; the first gives the medical history, or rather the journal, of the expedition; in the second, after attempting to assign the causes of the diseases which prevailed, some modes of prevention are offered; and in the third, there is some account of the diseases. Fever and Ophthalmia prevailed to a great extent. The first case of plague appeared in the hospital of the 88th regiment. This much-dreaded disease made its attack upon one of the sick nurses, and was attended to by Dr. McGrigor himself. Fever was, as already stated, the prevailing disease, and some fatal cases had occurred. In his morning visit, he observed that one man had a swelling in the armpit, and immediately took the alarm. The hospital serjeant observed that two men who died during the night had the same swellings, one in the groin and the other in the armpit. On examining the corpses in the dead house, he had but too sure proof that the plague was in the hospital. He instantly reported the alarming occurrence to the Commander in Chief, emptied the contents of the hospital into the plague hospital, established a quarantine, and took the other necessary measures in the Army. The consternation was general, and many men and several officers of different corps were placed in quarantine; but amidst the consternation, and not until three weeks after, was it noticed, that Dr. McGrigor ought at the same time to have been sent to the Quarantine or Pest Hospital. Of Ophthalmia in the army the cases exceeded 600. Dysentery and Hepatitis aslo prevailed to a great extent among the European corps, and the mortality was great. The small pox broke out in the hospital of the 10th regiment, and, in one week 632 Europeans and 380 Sepoys were returned as labouring under this pestilence.

Dr. McGrigor expresses himself decidedly of opinion, that in the peculiar soil and climate of Egypt we are to look for the principal causes of the diseases which prevailed the most in that country. In respect to the soil and climate of Egypt, as giving rise to disease, he says, they are of considerable variety. In a country of such extent, stretching from the tropic, on the one side, to the shores of the Mediterranean on the other, this might be expected. If, in Lower Egypt, and on the bleak shores of the Mediterranean, they saw the diseases of Europe, and met with the inflammatory diathesis; in Upper Egypt, and as they approached the tropic, they met with the same diseases, and succeeded with the same treatment,

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as in the peninsula of India. Dr. McGrigor does not venture upon any discussion of the theories of contagion. He points out many striking resemblances between the plague and the destructive yellow fever of the West Indies; but he does not distinctly imply that the diseases are the same.

The diseases of the Indian army, appear to have been very few, though the cases were numerous. Dr. McGrigor speaks of the plague and the ophthalmia as the endemics of Egypt. The plague raged most in the coldest months, and was checked at the period of the summer solstice. Dr. Whyte, an enterprising medical officer, subjected himself to inoculation of the matter from the buboes formed in cases of this disease. He fell a victim to his zeal in the cause of science. Dr. McGrigor has given an account of his case. Mercury and Nitric Acid appear to have been the remedies attended with the most advantageous effects in this disease.

Ophthalmia in Egypt, at particular seasons, is a most generally prevailing disease. The animals of the country, particularly dogs and camels, are subject to its attacks, as well as the human species. It was seen much less frequently in the native Indian, than in the European corps. The alarming rapidity with which the disease proceeded, constituted its remarkable character, and its difference chiefly from the ophthalmia seen in this country; and if active measures were not speedily resorted to, the destruction of the organ, or the loss of its function, soon took place. With respect to the causes of this affection, Dr. McGrigor says as follows:

"From the days of Prosper Alpinus, the salts contained in the soil of Egypt, have been supposed to be among the principal causes of the ophthalmia of the country. Though the various modifications of light and heat, no doubt, act as exciting causes; yet, to the particular soil of Egypt, and to the constitution of the air there, we must look for the regular and the principal causes of this disease.

"In Egypt several causes occurred, which, in any country, separately applied, would be adequate to the production of violent ophthalmia—the dry, white, dazzling soil, the fine sand and dust constantly thrown about in whirlwinds, and entering every crevice. If an ophthalmia is epidemical or is endemic in Egypt, the above causes will render it a very violent disease.

"But I conceive, that, of themselves and alone, those circumstances do not produce the violent ophthalmia seen in Egypt. In no place did those circumstances exist in greater force than at Kosseir, on the march across the Great Desert, and at Ghenné. Yet, till our arrival at Ghiza, the disease did not appear."

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One circumstance with regard to the occurrence of ophthalmia, is mentioned by Dr. M^cGrigor, and deserves particular attention—the officers were rarely the subjects of the disease. This can only be accounted for by the greater attention paid to cleanliness. In the 88th regiment, out of which not forty men escaped an attack, only two officers, out of thirty, had ophthalmia—a circumstance certainly favourable to the belief of its contagious character.

On the subject of the remaining diseases, fever, hepatitis, and dysentery, Dr. M^cGrigor is very brief. He remarks that the effects of the solo-lunar influence, so remarkable in fever, hepatitis, and dysentery, in India, were in Egypt likewise very observable. In the treatment of these diseases, the practitioner found his account in attending to the periods of the moon; at the full and the change, paroxysms would frequently supervene, if not anticipated; and, at these periods, convalescents would frequently suffer a relapse. He dwells particularly upon the identity of the fever with which the troops were affected in Egypt, with that seen in India, and described under different names, at different stations. It appears to be the remittent fever of Bengal. Dr. M^cGrigor never met with a single well-marked case of typhus in Egypt, nor did he ever see this species of fever in India. Many instances of the Guinea worm prevailed on the voyage from India to Egypt, but was little seen in the latter country.

Dr. M^cGrigor remained at home but for a short time, being appointed in 1807, Chief of the Medical Department in Walcheren. After the performance of the very arduous and painful duties attached to this office, in the execution of which he obtained the highest praise, as recorded in the dispatches of Sir Eyre Coote, upon whom devolved the command of the army after the departure of Lord Chatham, he returned to this country, and was appointed Inspector of Hospitals, for the Portsmouth, Severn, and South West Districts.

In 1808 Dr. M^cGrigor published *A Letter to the Commissioners of Military Inquiry, in reply to some Animadversions of Dr. Edward Nathaniel Bancroft, on their Fifth Report.* This publication is controversial, and it is not necessary now to enter into the particulars of the discussion. The commissioners made several charges against the members of the medical board, and they were replied to by the Surgeon-general, and Dr. E. N. Bancroft. Dr. M^cGrigor replies to the latter, particularly as relates to the comparative merits of general and regimental hospitals, and the question of expediency whether physicians should be taken from those who have been highly and regularly educated as such from universities and civil life, or whether they should be selected from the regimental surgeons. Dr. M^cGrigor contends

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for the latter, and for the encouragement of every possible variety of talents in the service.

In 1810 Dr. M^{c}Grigor printed, in the Edinburgh Medical and Surgical Journal (Vol. VI. p. 19), *Observations on the Fever which appeared in the Army from Spain on their Return to this Country, in January*, 1809. The dreadful havoc occasioned by malignant fever in the lamented Sir John Moore's army, will long be remembered. The reports on this subject strongly illustrate the effects of disease occurring in a dispirited retreating army, making its way, at an inclement season of the year, over a desolated country. Dr. M^{c}Grigor gives an account of the arrival of the troops at Portsmouth, and of the condition in which he found them. Every part of the army, he says, was found to be unhealthy. Several died in the boats which brought them on shore, and were corpses brought into the hospitals, while the greater part was in the last stage of low fever.

In 1811, upon the retirement of Dr. Frank, Dr. M^{c}Grigor was appointed Chief of the Medical Department of the Army in the Peninsula, under the command of the Duke of Wellington. It is a circumstance worthy of note, and reflects equal credit on the liberality of the commander-in-chief, and on the zeal and ability of the medical officers of the army, that for the first time the services and merits of the professional men were noticed at this period in the public dispatches of the Duke, in the same manner as those of their companions in arms, the military officers, and were published in the Gazettes. The services of the medical department were likewise brought under the notice of Parliament.

In a letter from the Duke of Wellington to Dr. M^{c}Grigor, dated July 25, 1812, and printed in Lieut.-Colonel Gurwood's most valuable collection of the Duke's dispatches, he says, "I assure you I am very sensible of the diligence and attention of the medical department, of which I have reported my sense to the Secretary of State."

In these highly honourable records, Dr. M^{c}Grigor's name is particularly conspicuous, and we accordingly find that upon the return of the army from the Peninsula in 1815, he received the honour of knighthood, and was placed at the head of the medical department of the army, as Director-General. He also received from the sovereign of Portugal, on account of his services to the Portuguese troops, the order of a Knight Commander of the Portuguese order of the Tower and Sword. The order of the Crescent had also been conferred upon him by the Grand Sultan, at the conclusion of the service in Egypt.

In the distinguished position of Director-general of the Medical Department of the Army, Sir James M^{c}Grigor has been able to render the most

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effective services to his country, not only by appointing to the army gentlemen of high professional attainments, but also in making available the results of their experience to future generations. The science of medicine is in no manner more truly advanced, than by the accurate histories of diseases, and the faithful detail of the practice adopted by enlightened men. The arrangement of these, as reports, on an extended scale, are of the first importance, and conduces to fix the practice upon a rational system. Before coming to office, Sir James had often viewed with regret, that the information and experience of the medical officers of the army, gained by service in every quarter of the world, and particularly of some diseases of which we possessed but imperfect information, had not been turned to public use. On his appointment to office, therefore, he put in execution a plan he had long meditated. He framed a set of Returns and Reports, calculated to elicit information, which every officer was required to furnish regularly at stated periods, and to transmit to him on the diseases and mortality of the troops; and further, from time to time, queries on the history of particular diseases were transmitted to every officer abroad where those diseases prevailed, and replies given, which altogether furnished complete histories of those diseases. In consequence of this most judicious plan, a body of the most valuable information has been collected in the records of the office of the Medical Department of the Army, for the last twenty-four years. In order that these valuable records of the talents and zeal of many able officers should not be lost to the public, in 1835 Sir James obtained the sanction of the government to employ three officers, whom he selected to compile a digest of them; and, accordingly, two volumes of them have been published. The first gives a History of Diseases and Mortality in the Army in Honduras, Jamaica, and the West Indies, for a period of twenty years; the second volume gives an account of Malta, Gibraltar, the Ionian Isles, and of Great Britain. The other volumes will appear in succession, and may extend to five volumes in all, and when completed, will give a history of disease in every quarter of the world where a British soldier has been stationed, from 1815 downwards. These reports merit further notice:—

Statistical Reports on the Sickness, Mortality, and Invaliding among the Troops in the West Indies, prepared from the Boards of the Army Medical Department, and War Office Returns. Lond. 1838, *Folio.* This has not inappropriately been characterized as being "not one of the great blue books distributed to members of Parliament, but, on the contrary, one of the small and useful blue books, which do not so often appear, and which are not always so highly appreciated as they deserve." The justice of this descrip-

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tion will be apparent, when the reader is told that, in a volume consisting of not more than 143 pages, a summary is given of not less than 160 folio volumes. The Report extends over a space of twenty years, and gives admirable materials for understanding both the nature, extent, and causes of sickness and mortality among our troops in the West Indies. To attempt to describe the various tables of which this work consists is quite in vain; it is sufficient to state, that they are all admirably arranged, drawn up with evident accuracy, and fully adequate to their intended design.

Statistical Reports on the Sickness, Mortality, and Invaliding among the Troops in the United Kingdom, the Mediterranean, and British America. Lond. 1839. *Folio.* This is arranged in a similar manner to the preceding; and the combination of Reports in this volume has been adopted, in order to illustrate the influence of climates, of which the diseases are, in many respects, similar.

From the narrative given of Sir James McGrigor's public services, it will be seen that he has enjoyed but little leisure for composition, yet he has contributed to the Transactions of the Medico-Chirurgical Society a paper of considerable interest:

(Vol. VI. p. 381.) *Sketch of the Medical History of the British Armies in the Peninsula of Spain and Portugal, during the late Campaigns* (1815). This paper is arranged under three heads: the first comprises the medical history; the second, some remarks upon the diseases which prevailed; and the third, an account of the chief means by which sickness was diminished in the army, and mortality in the hospitals. These are considered under the services included in four distinct periods, from December, 1811, to April, 1812; from June to November, 1812; from May to December, 1813; and from February to May, 1814, when hostilities ceased. The number of battles fought in the campaigns in the peninsula, and the severity of the various memorable actions, open a very wide field for observation, and point out the consequences occasioned by the inclemency of season, little or no shelter, and the most harrassing duties. Great numbers of the wounded at the siege of Cuidad Rodrigo were, from the severity of the season, frost-bitten, and tetanus was of frequent occurrence. After the siege of Badajoz, the number of wounded in the hospitals exceeded 5000. From 21st December, 1811, to 24th June, 1814, no less than 346,108 cases of disease or wounds were treated in the hospitals. The diseases consisted of fever of various types, dysentery, pneumonia, phthisis pulmonalis, rheumatism, tetanus, and hospital gangrene. Of these, dysentery produced the greatest mortality in the army, 4717 dying of this disease.

On all the diseases to which our brave soldiers were subjected, Sir James

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makes some pertinent observations, and the medical inquirer will do well to consult this paper with attention for a variety of important information respecting them, as well as the best means of maintaining health in an army on service. On the subject of tetanus, Sir James mentions a curious case in which recovery was effected, apparently in consequence of long-continued accidental exposure to severe wet and cold.

Sir James McGrigor has the great satisfaction of having introduced to the army a body of medical officers, of much higher attainments than it ever before possessed; in fact, the qualifications are now more than that which is required either by the College of Physicians or Surgeons, and not a few have distinguished themselves by their scientific acquirements. There can be little doubt that the support which he has received from so many able men in their duties has mainly conduced to his success in the administration of the medical department of the army. In the exercise of his office as director-general, Sir James continues to be most asssiduously engaged. His popularity in the service is well known; and it is the legitimate result of an undivided attention to the performance of his duties, and the elevation and perfection of his department in the army. Numerous testimonies of regard have been offered to Sir James, some of which deserve to be recorded. On the conclusion of the service in the Peninsula, a present of a service of plate of the value of 1000 guineas was presented to him by the physicians, surgeons, apothecaries, and purveyors, who had served with him in the army; and upon a vase was engraved the following inscription:—

JACOBO McGRIGOR, Equiti, M.D.
Col. Reg. Med. Edin. Soc.
Nosocomiorum regalium inspectori generali,
Viri admodum insignito,
Sive acumen ingenii nativum respicias,
Sive strenuam illam atque indefessam,
Muneribus inspectoriis navatam operam;
In quibus apud Lusitaniam, Hispaniam, Galliam,
Longe lateque fungendis.
Non bono solum Publico cum integritate prope singulari,
Verum etiam sociis suis co-operantibus,
Comitate quadam et benignitate propria
nunquam non consuluerit;
Cui denique sacros Hygeiæ fontes aperire,
Atque artis medendi divina studia,

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Vim æmulam ingenuas apud Scientias eliciendo,
Promovere feliciter omnino contigerit;
Hocce Monumentum, quale quale pignus!
Summæ in ducem suum dignissimum observantiæ,
sacrum ac perenne vult
Status major nosocomiensis
Wellingtonianus.
Anno Dom. 1814.

On another occasion, his brother officers caused his portrait to be painted by the late J. Jackson, R.A., and presented it to Lady M^cGrigor as a mark of esteem. This portrait has been engraved, but the plate is private. Another portrait was painted by Sir David Wilkie, R.A., and is placed in the library of the medical officers of the army at Chatham. This library, with a collection of specimens of Pathological Anatomy, and a Museum of Natural History, are among the Institutions of the Medical Officers of the Army, founded by Sir James M^cGrigor since he came to office. The army offers abundant opportunities to the medical officers to form a museum of morbid anatomy. In Portsmouth, in 1810, Sir James M^cGrigor first made the attempt. Some preparations were made at Hilsea-hospital, but they scarcely amounted to fifty. They were made by Mr. Fraser and Dr. James Forbes. In 1816 they were removed, though in a state of decay, to York hospital; but here little was effected, and the preparations were ultimately taken to Chatham, where the facilities for their preparation, arrangement, &c., are much greater, and where the object has been pursued with vigour and ability. For several years government lent no assistance towards this object, and the expense attendant upon making them, their transit to England, &c. fell entirely on the medical officers. The museum is now placed on a solid foundation; and much credit is due to the late Dr. Forbes, Inspector General, when he superintended at Chatham; to the late Mr. Schetky, an able draftsman and an excellent anatomist; to Dr. Skey; and to Dr. Clark, as they successively came to the superintendence at Chatham; and very particularly to Dr. John Davy, the able officer who now superintends there; and to the spirit of the body in general of Medical Officers of the Army, for the state into which this collection has been raised. The museum of Natural History, greatly extended, has lately been placed in a separate building, and contains some Zoological specimens not to be found in any other collection. Two fasciculi of engravings from the collection of morbid anatomy in the museum have been already published. The

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collection contains some excellent specimens of diseased structure, sent from tropical climates and from every foreign country where British troops have been stationed. An extensive MS. descriptive catalogue of the preparations exists at Chatham, and the cases, fully detailed, are placed in the library, forming not fewer than 300 folio volumes of Clinical Histories, to which reference can easily be made. In the museum medical department, there are 1420 preparations in morbid anatomy, 500 in natural anatomy, 372 in comparative anatomy, and 500 paintings, drawings, casts, &c. The library was commenced in 1822, and contains about 3000 volumes.

Sir James McGrigor, has further originated two other institutions highly valuable to the families of the Medical Officers of the Army: a Society for the benefit of their widows, which, with a capital of £60,000, gives yearly pensions to 90 widows; and a Society for the Orphans of Medical Officers, which, from the interest of its funds, distributes annually £350 to the most necessitous objects.

Sir James McGrigor's eager desire to promote the interests of his profession, and benefit his successors, cannot be more strongly exemplified, than in the fact that he encouraged the establishment of a public medical library in the place of his nativity, and by his exertions he obtained, from his brother medical officers, a subscription in aid of this object amounting to not less than £700; affording an evidence not only of the attachment he feels towards advancing medical science, but also of the high regard and esteem in which he is held by those with whom he has been most nearly associated, and to whom, consequently, his merits are best known. His countrymen have not been backward to testify the great respect they entertain for his talents and character. He is a fellow of the Royal Society of Edinburgh, and a fellow of the Royal College of Physicians of Edinburgh. He is also an honorary fellow of the Royal College of Surgeons of Edinburgh; of the Faculty of Physicians and Surgeons of Glasgow; of the Medical Society of Edinburgh; and of the Medical Society of Aberdeen, of which, with the late Dr. Robinson, he was the founder, in 1789. In 1822 he was elected lord rector of Marischal College of Aberdeen; and in 1823 he was re-elected to that honourable office, when the election was contested with Mr. Joseph Hume, M.P. The University of Edinburgh, in 1825, conferred upon him the honorary degree of doctor of laws, a degree that is very rarely granted by the university; and the town council of Edinburgh made him an honorary burgess of their corporation.

Sir James McGrigor is a member of many other institutions: he is a fellow of the Royal Society of London, a fellow of the Royal College of

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Physicians of London, an honorary fellow of the Royal College of Surgeons of Ireland, and a fellow of the Royal Medical and Chirurgical Society. He is also a member of the medical societies of Montpellier, New York, Quebec, and various provincial institutions. Upon the establishment of the University of London, he was appointed by the government a member of the senate.

In 1831, Sir James M^{c}Grigor was created a Baronet, and upon the accession of her present Majesty, he was appointed one of the physicians extraordinary to the Queen; as he had been to George IV. and William IV.

The preceding enumeration of honours which have been conferred on Sir James M^{c}Grigor, renders it unnecessary for me to add one word further as to his merits, or the services he has contributed to medical science. His profession has been, and still happily continues to be, much benefitted by his exertions; and the department over which he has now for so many years presided, has been much elevated by his attention to its duties. Sir James can need no further eulogium than that which is to be found in the Dispatches of the "great captain of the age," where it is said, "I have every reason to be satisfied with the manner in which Dr. M^{c}Grigor conducted the department under his directions; and I consider him one of the most industrious, able, and successful public servants I have ever met with."

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THE
BOSTON-LIBRARY
SOCIETY

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H. Room

W. & F. Hall.

THOMAS JOSEPH PETTIGREW,

F.R.S. F.S.A. F.L.S.

&c. &c. &c.

"I will honour fame, for the deserving deeds which produced it. In myself, I will respect the actions that may merit it; and, though for my own benefit, I will not much seek it; yet, I shall be glad if it may follow me, to incite others, that they may go beyond me."

FELLTHAM.

IN accordance with a wish very generally expressed by those who have done me the honour to patronise my MEDICAL BIOGRAPHY, I close it with an AUTOBIOGRAPHICAL Sketch, which, under other circumstances, I should have long hesitated to perform. My life, the particulars of which I now briefly submit to my readers, will be seen to have been devoted to my profession, to literature, and to general science—it has been much chequered —often sustained by expectations which have rarely been realised, and frequently buoyed up and supported by the "invincible obstinacy of Hope," a passion, the influence of which upon the physical strength is perhaps as great as upon the mental functions, and which has been truly characterized by Campbell as that which

"———— of all passions, most befriends us here;
Passions of prouder name befriend us less;
Joy has her tears, and transport has her death:
Hope, like a cordial, innocent, though strong,

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THOMAS JOSEPH PETTIGREW, F.R.S.

Man's heart, at once, inspirits and serenes,
Nor makes him pay his wisdom for his joys.
'Tis all our present state can safely bear,
Health to the frame, and vigour to the mind,
A joy attempered, a chastised delight,
Like the fair summer evening, mild and sweet!
'Tis man's full cup, his paradise below!"

My father, WILLIAM PETTIGREW, was a native of Glasgow, and at an early age lost his parents. He received but a slender education at the grammar school of his birth-place, afterwards studied medicine and entered as a Surgeon's Assistant in the navy of Great Britain, in which service he rose to be chief surgeon of some of our largest line of battle ships, by which he acquired an extensive practice, having been engaged in several of our most celebrated battles under the command of Lord Rodney, Lord Howe, Lord Hood, Earl St. Vincent, &c. The last appointment he held was that of Surgeon to the Victory, ever famed as the vessel in which our greatest naval hero paid the debt of nature. Upon a cessation of hostilities, my father settled in practice in Fleet Street, in the City of London, where I was born on the 28th of October, 1791. Considering the very superficial education my father had received, it is rather astonishing that he should not have been more solicitous concerning that of his children; but his temper and disposition were of the most easy description, he was of the kindest nature—he allowed nothing to ruffle him—was light-hearted and abounded with humour—a disposition he appears to have inherited from his ancestors, one of whom, the Gowan Priest, "Clerk Pettigrew," Sir Walter Scott has particularly noticed in his novel of Rob Roy. My father placed all dependance on the advantage of practice and experience as he termed it, and though not indifferent by any means to the pleasures of reading, he did not allow himself to be captivated by the elegancies of literature, or engaged in the profound researches of science. His habits were remarkably abstemious: I think he was altogether the most temperate man I ever knew, and he left to his children a legacy of no little value in the possession of a sound constitution. He lived to the advanced age of 86, dying in 1825, of no manifest disease: it was a decay of nature, and to him may truly be applied the passage in Cicero, "Non illi fuit vita erepta, sed mors donata." Death to him indeed was "a soft and easy nothing; the cessation of life's functions, action's absence, and nature's smooth repose—nature's holiday, which delivers man from the thraldom of the world's school, to the freedom of his father's family." Plato, in his Timæus, has well

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marked the difference of death arising from decay and from disease. "The death (he says,) which is produced through wounds and disease, is painful and violent; but that which is caused from old age, proceeding to an end according to nature, is of all deaths the most free from labour, and is rather accompanied with pleasure than pain."

The only scholastic education I received, was at a private academy in the neighbourhood of my birth, where I made but little or no progress. I had the misfortune to fall under the direction of a variety of tutors of no great ability, each of whom appeared to busy himself in undoing that which his predecessor had accomplished, and from the labours of the whole, I literally derived nothing, or worse than nothing, for I was in every point of view unsettled as to precise information upon any branch of learning whatever. At a very early period I manifested a fondness for anatomical pursuits, in which I was much fostered by a friend of my father, a most worthy excellent man, the late Mr. William Hilliard of Stockwell, Surgeon. My inclination to the study of anatomy amounted absolutely to a passion, and it was most generously encouraged by this gentleman, with whom, when only 12 years of age, I studied the bones, ligaments, and muscles, and had many opportunities afforded me for dissection. At the early age of 14, I was withdrawn from school and devoted to medical science. My father had the care of the inmates of the workhouse and the poor of a large parish, and by zeal and attention to their wants, I soon became a great favorite with the officers of the parish, and also with the poor, so that I could do any thing I pleased in the parochial establishment. I lost no opportunity afforded to me for the examination of those who died in the workhouse, and I indeed carried this to such an extent, that I was at one time summoned before the authorities to answer to a charge which had been made against the frequency of my anatomical researches, and which had unfortunately inspired so much terror in one poor old woman that, fearing she was about to die, she discharged herself from the house, expressing her aversion to have her remains subjected to "the mangling of young Pettigrew." The officers of the parish were fortunately men who knew how to appreciate my conduct, and with a proper admonition as to conducting my examinations with the greatest privacy, placed no restriction whatever upon my practice. To this kind and judicious conduct I am sensible that I owe much; it enabled me to make myself well acquainted with the human frame, and fixed that attachment to my profession, which has never for one moment been diminished or subdued. At the age of 16, I was entered as a pupil to the late Mr. John Taunton, an unlettered man, but a zealous anatomist and an excellent practitioner. I was just the person he required; and I

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became his favorite pupil. I assisted him to make a very large number of preparations, to arrange his museum, and to aid in almost innumerable *post-mortem* examinations, for he was surgeon to the City and the Finsbury Dispensaries, and had besides, the entire management of an Institution he himself founded, the City of London Truss Society, by which I became intimately acquainted with the varieties of Hernia. It is almost incredible the number of cases that I saw and attended to, offered by the populous districts of Clerkenwell, Hoxton, Shoreditch, Bethnal Green, Spitalfields, &c. These yielded to the Dispensaries many thousands of cases. I took a large number under my care and was in the habit of visiting the patients from 6 o'clock in the morning until the hours of lecture, when my attendance was otherwise demanded. This immense fatigue and the consequent irregularity of my diet soon produced a weakness of frame and gave rise to an extreme irritability, which, however, happily was not of long duration. To recruit my strength, I was compelled for a time to abandon my studies and leave London; but after a few months returned to follow, with unabated zeal and activity, the pursuit of my profession. I attended various Lectures on Anatomy, Physiology, Surgery, Medicine, Materia Medica, Chemistry, Midwifery, &c., besides the practice of the Hospitals of St. Thomas and Guy. I formed with the pupils at Mr. Taunton's school, a society, of which, the members were to lecture in rotation, upon subjects of anatomy and physiology, and our teacher generously lent to us the use of his valuable museum. There were, however, but few disposed to, or perhaps qualified for, this exercise; and rarely indeed were any lectures delivered, except by Dr. H. H. Ayshford and myself, who were linked together by many ties of friendship and regard. He was much my senior, was already an Assistant Surgeon in the Royal Artillery, an amiable and an accomplished gentleman. I assisted him greatly in the publication of his *Tabular Views of the Anatomy of the Human Body*, published in 1810. The tables of the arteries were altogether made by me and a great part of those on the Brain and Nerves. Dr. Ayshford married and went abroad; he was taken seriously ill at Gibraltar and obliged to leave for England. The vessel was wrecked on its passage and poor Ayshford, his wife, and, I think, three children perished among the waves.

I made all the dissections for the Lectures and Demonstrations at Mr. Taunton's School; and at the age of 17, I was literally installed Demonstrator in the Dissecting Room, and when only 18 years of age, (in 1809) I published a small quarto volume, entitled *Views of the Basis of the Brain and Cranium, accompanied with Outlines, and a Dissertation on the Origins of the Nerves, interspersed with Surgical Observations;* which

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I dedicated to my teacher Mr. Taunton. This work was originally entered upon as a speculation by the late Mr. J. J. Watt, whose views of the Fauces, Pelvis, &c., are well known, and the artists, Mr. Thomas Baxter and Mr. Hopwood. All these gentlemen are now no more. A dispute originated among them, and Mr. Watt declined to furnish the literary part of the work. To Mr. Baxter, a man of genius and great perseverence, an artist of considerable ability and the author of an Illustration of the Egyptian, Grecian, and Roman Costume, I was well known; and he applied to me to supply the place of Mr. Watt. I readily undertook this task. Mr. Baxter had made the drawing of the Basis of the Brain, from a dissection by Mr. Watt, but it was faulty in its display of the Cerebellum. I made dissections to remedy this and some other inaccuracies; the drawing was altered and another was made of the Basis of the Cranium, showing the passage of the Cerebral Nerves, from which engravings were executed by Hopwood, and they may fairly be considered as two of the most beautiful anatomical engravings ever published. That of the Basis of the Brain has been universally admired for its fidelity and elegance. It is enough to say that it obtained the unqualified praise of Mr. Cline, Mr. Henry Cline, Mr. (now Sir) Astley Cooper, and other distinguished anatomists. This was my earliest work, and it was attacked with extraordinary bitterness. A review of it was put forth in a publication entitled "The Annual Medical Review and Register," in which I was most scurrilously abused, and I shall never cease to remember the distress to which I was subjected by a charge against me, which appeared to affect my moral character. I copy the passage to show to what base means some critics resorted, to destroy the reputation of a young man aspiring to professional eminence :

"The literary productions of foreigners, being unprotected by law, may be plundered without any fear of legal retribution. But this circumstance, instead of diminishing, would aggravate, in the estimation of every generous mind, the mean and contemptible character of the transaction. Mr. Pettigrew seems to think differently on this subject: for he has not only caused the 'tabula baseos encephali' of Söemmering to be copied, without the slightest acknowledgment of the source from which it was derived; but also, with singular effrontery, has placed under the engraving the inscription, *T. J. Pettigrew, direxit*, with no other assignable motive than that of appropriating to himself, more completely, the recompense due to the labours of the above-mentioned very learned and skilful anatomist."

Söemmering's work I had never seen. I eagerly sought for it in the public libraries—but in vain; scarcely a copy appeared to have reached this country. At length I found it, and procured the loan of it from the

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late Mr. Joshua Brookes, the celebrated anatomist, and was surprised to find that two views of the same object should be so thoroughly dissimilar. There are now several copies of this work in the country: I possess one, and it is therefore easy to detect the malignity and falsehood of the reviewer on this occasion. My juvenile production, though put forth in an unpretending manner, seemed doomed to the severest scrutiny, for even Mr. Brookes asserted that the directions given in it, for cutting down upon some of the branches of nerves most commonly the seat of tic douloureux, were such as he had been in the habit of delivering in his lectures. I was not a pupil of Mr. Brookes, nor had I ever attended his lectures. I had formed my rules by actual measurements made on the dead body, and did not attach any particular importance to them. As, however, Mr. Brookes's complaint was made publicly, in the London Medical and Physical Journal, I replied to it, and had the pleasure of satisfying Mr. B. that I had in no way whatever derived my information from his descriptions. This circumstance led to a friendly intercourse between us, which terminated only with the loss of that estimable man; and the regard he entertained for me is best shown by the fact, that he solicited me to preside at a very large meeting of his pupils and friends, when he took his farewell as a teacher of anatomy, on the 24th November, 1826, having exercised that laborious duty for nearly 40 years, and educated not less than 5000 pupils, many of whom have greatly distinguished themselves in different parts of the world. It was my wish to have replied to the unjust attack in the Annual Medical Review; but my friends would not permit me to notice so scurrilous a performance. The Review ceased with the volume in which the attack was printed, its object appearing to be to vilify all but a certain *clique* in the profession, who were vainly attempting to establish an Utopian scheme of reform.

My time, it will be seen, was fully occupied by attendance upon the various lectures and practice of the dispensaries, hospital instruction, and the poor of the parish in which I resided; yet, feeling acutely sensible of the imperfections of my education, and the difficulty in making myself acquainted with the writings of those not of my own country, I resolutely set to work, and, with the aid of a few masters, speedily acquired sufficient information of the modern languages to peruse all that I absolutely needed at that time. My attention was, however, afterwards directed particularly to the dead languages, so essentially necessary, in my opinion, to every one who wishes clearly and distinctly to ascertain what have been the precise advances made in any branch of medical science. No one can pay the requisite degree of attention to the study of the Greek and Latin languages

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without also being imbued with a taste for literature, and having his admiration excited by the finest specimens of ancient excellence. By great application I conquered many difficulties, which, under other modes of education, I should not have experienced; and, fully alive even to the present moment of the disadvantages to which I have been subjected, I have endeavoured to give that education to my children, that they should never experience the like inconveniences.

In June, 1812, I was admitted a Member of the Royal College of Surgeons, having been examined by the late Sir Everard Home, Bart., and I then began to turn my attention to private practice, at the same time that I continued my visits to the Borough Hospitals, where I was so fortunate as to receive particular attention from Mr. Henry Cline and Mr. Astley Cooper. Of the acquirements and operations of this latter most highly-celebrated surgeon, I have recorded the opinion I entertain in my printed memoir: of the former, whose health was bad (for he had a consumptive tendency,) nothing can be said but in praise—he was an excellent anatomist and an able surgeon—of profound and philosophical views—the worthy son of his sire—and, in thus alluding to the talents of the Clines, it is impossible not deeply to lament, and almost to condemn, the neglect manifested by them, who, in the possession of such great opportunities, and in the enjoyment of talents adequate to their advantages, have not left any record of the fruits of their long and extensive practice, beyond that which has emanated from the instructions given to their pupils.

My taste, I might almost say my rapacity, for books, was amply gratified in having been admitted, in 1808, a Fellow of the Medical Society of London, the library of which contains a very large collection of the works of ancient medical writers:—

"There physic fills the space, and far around,
Pile above pile, her learned works abound:
Glorious their aim—to ease the labouring heart;
To war with death, and stop his flying dart;
To trace the source whence the fierce contest grew,
And life's short lease on easier terms renew;
To calm the frenzy of the burning brain—
To heal the tortures of imploring pain:
Or, when more powerful ills all efforts brave,
To ease the victim no device can save,
And smooth the stormy passage to the grave."

CRABBE.

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I had been little more than three years a Fellow of the Medical Society of London, when I was very imprudently put forward by a party, of which Mr. Taunton was the principal agent, and elected one of the Secretaries, in opposition to Dr. Birkbeck, whose position in the profession, compared with that which I then held, ought to have secured him from such a contest. Its object, however, it must be remarked, was not directed personally against this respectable and talented physician, but proceeded from a laudable desire to have an efficient officer, who could and would devote the time necessary to the task of taking accurate minutes of the discussions, which was at this time done by the Registrar of the Society, the resident officer, a gentleman connected with the public press, but one who was not a member of the medical profession, or who had even received a professional education. The contest by which I was thus, at a very early age, chosen Secretary, gave rise to serious disputes in the Society. The consequences of such a position, it is easy to foresee, were unfriendly to me personally, and injurious to my prospects, and served, I fear, to lay a basis for some of the splenetic attacks I have sustained in my career. The advantages, however, arising from correct reports of the proceedings, soon became manifest, and the interest of the meetings increased. From the part I took in the discussions, as well as in drawing up the minutes, and the great zeal I showed for the welfare of the Society, I was much esteemed by the Fellows in general. The finances of the Society were, however, not in a prosperous state, and the services of the Registrar were now rendered of little importance. He was the only paid officer of the institution, and he gave in his resignation. At the suggestion of several members of the council, I offered to undertake the duties of the registrar for the mere consideration of living in the house of the society. I declined receiving a salary which was offered to me, or rather belonged to the office, preferring to hold my seat in the council and assist in conducting the affairs of the society. To me it was an object of considerable importance to be surrounded by a library of many thousand volumes, and literally to live among books. My offer was most readily accepted by the society, and in 1813 I became the registrar. For five years I conducted the correspondence, foreign and domestic of the society, and edited the Transactions. I contributed largely to the discussions, assisted many members in their researches, and in return received every mark of kind attention from the successive presidents of the society. Among those, I must particularly mention one to whom I was indebted for a long series of great kindnesses and the most affectionate attachment, the philanthropic Dr. Lettsom. A congeniality of feeling, and a similar activity of disposition, much endeared us to each other; and although the difference in our ages was very considerable,

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I could not but look upon him in the light of a brother. "Age like his, and youth might well live together, for there was no crabbedness in his age. Youth therefore, was made the better and the happier by such society. It was full of pleasure instead of care; not like a winter, but like a fine summer evening, or a mild autumn, or like the light of a harvest-moon,

> "Which sheds o'er all the sleeping scene
> A soft nocturnal day."*

The Medical Society of London may be said to owe its present existence to the liberality of Lettsom. The dissensions which occurred prior to my connexion with it, and resulting from the appropriation of the chair and the undue influence exerted by Dr. James Sims, led to the formation of the Royal Medical and Chirurgical Society. Drs. Lettsom, Clutterbuck, Hancock, Pinckard, and a few others of eminence adhered to the old establishment, and maintained its existence by their learning and experience. But Lettsom had given to the society the freehold house in Bolt-court, where the meetings of the society were held, and this circumstance, together with the possession of the curious and extensive library, before alluded to, has saved the institution from destruction. No member manifested an equal zeal in its interests to Lettsom, and no one contributed more papers and subjects for discussion than he did. As president of the society for several years, my intercourse with him was necessarily intimate, and he always displayed the greatest interest in my welfare. Scarcely a day passed without communication between us; his most active mind was ever engaged in promoting or devising schemes for the extension of science and the amelioration of the condition of his poorer fellow creatures. His extreme philanthropy had much reduced his worldly wealth, and he had experienced some personal inconveniences which were on the point of being relieved when he was summoned away to another existence. The immediate cause of his death was an attack of rheumatic fever, excited by a cold, which he got at a *post-mortem* examination of one of his patients. My intimacy with him was such, and the confidence he reposed in me so great, that on the occasion of this fatal illness, he intrusted to me the care of his patients. Upon his death, which took place on November 1st, 1815, it fell to my lot to perform a task severely painful to me, but imposed by duty, and in obedience to a pledge I had given Dr. Lettsom, in the event

* The Doctor, vol. v. p, 198.

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of surviving him, to deliver an eulogy upon his character at the Philosophical society of London, of which he was the president. This institution was principally projected by me, and arose in some measure from a smaller one of a similar description, to which I had given my best assistance—the City Philosophical Society, the meetings of which were held in Dorset-street, Salisbury-square, at the house of an extraordinary man, who I believe is not now living, Mr. John Tatum. He was a mechanic, a manufacturer of silver table spoons and forks, and quite unlettered; yet in the possession of a naturally powerful and vigorous mind, he devoted it to the consideration of subjects of natural and experimental philosophy. He possessed a very extensive collection of apparatus of every kind for philosophical purposes, chiefly made by himself, and was one of the best manipulators I ever beheld. His experiments were well arranged, and seldom failed in their effect. His explanations were lucid, but conveyed with a pronunciation which at times was perfectly ludicrous. At his rooms, among other persons who afterwards distinguished themselves in science, was the present highly gifted Dr. Faraday, professor at the Royal Institution. The City Philosophical Society was begun in 1808. I gave the first lecture, and chose for my subject a singular one for such an occasion—*Insanity*. At this time I was not quite seventeen years of age, and so constant and unwearied had been my application to studies, literary and professional, that my health had suffered much. I had frequent attacks of head-ache of the most severe description, and laboured under a variety of most distressing symptoms, arising from that irritable condition of the nervous system which is not unfrequently produced by extraordinary exertion. I was, in this state, impressed strongly with an idea that I should suffer from the most afflicting of all human calamities; hence I was induced to read all the works I could possibly procure upon the nature and disorders of the mind, and having thus particularly directed my attention to the subject of insanity, I selected it as the topic of the Introductory Lecture. After that I delivered various lectures on Anatomy, Physiology, and Natural History, and I established an Anatomical Class which consisted of more than twenty of the members, to whom I was in the habit of demonstrating weekly. The Philosophical Society of London was an Institution of a similar character, but more extended in its views. It commenced in 1810, by an address which I delivered *On the Objects of Science and Literature, and the Advantages arising from the Establishment of Philosophical Societies*. Not only were lectures given on all subjects, excepting theology and politics, but discussions were also maintained, conversations held, and a fine field opened for the exercise of the youthful mind. On

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these occasions I was in the habit of taking an active part, by which I acquired great facility of speech. I had the honour of introducing Dr. Lettsom to the society, of which he shortly after became the president. The *Eulogy* I delivered on occasion of his decease, met with the approbation of the society, and of his Royal Highness the Duke of Kent, who entertained a great regard for Dr. Lettsom. By his Royal Highness's command, my oration was printed, in 1816, and I had the honour to inscribe it to his Royal Highness. This eulogy, however, could not possibly do more than give a slight sketch of the various claims to public gratitude due to this physician and philanthropist, and upon his papers and correspondence being placed in my hands by his family, I determined to write a fuller memoir; and accordingly, in 1817, published in 3 vols. 8vo. *Memoirs of the Life and Writings of the late John Coakley Lettsom, M.D., &c. &c. &c., with a selection from his Correspondence.* In these volumes I endeavoured faithfully to depict Dr. Lettsom's personal and professional character, and to give a selection from his correspondence with the most eminent literary and medical characters of the day, both at home and abroad. In this collection will be found a vast variety of general information on subjects of medicine, literature, and philosophy, and an abundance of anecdotes which have since formed valuable aids to many biographical works.

To the Philosophical Magazine, edited by Mr. Tilloch, I furnished a great number of papers containing analyses of many of the lectures delivered at the Philosophical Society, and an account also of some of the discussions. In Vol. XXXIX. page 142, I have given a detail of the objects of the society, which are there stated to be "those of every man who loves improvement—to foster genius, to eradicate unphilosophical prejudice, to increase the knowledge of nature and most of man; to destroy, as much as possible, that false definition of words which has been justly reprobated by Locke and Bacon as the origin of sophistry and misconception; but, above all to remove that barrier erected by pedantry against universal knowledge, which has introduced an *esprit de corps* into philosophy, and rendered it the territory of a sect rather than the province of the world." In addition to these notices I furnished to Tilloch's Magazine two papers:

1. (Vol. XXXV. p. 161.) *On Injuries of the Brain.* This communication (Feb. 10, 1810) relates to two cases of tumour in the brain, one in a gentleman of very acute intellect, who manifested the sense he entertained of the importance of anatomy to the well-being of society, by bequeathing his body to Mr. Taunton for dissection; the other in an old woman afflicted with insanity, under which she had laboured for at least ten years prior to

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her decease. The ordinary appearances observed upon the examination of cases of mental derangement were visible in this case, and in addition to these, there was a tumour of some magnitude extending into both the cineritious and medullary substances of the brain, opposite to the temporal fossa. The tumours in both cases were precisely of the same character—of an oval shape, granulated appearance, highly vascular, and of a dark blue colour around the edge. In the insane female there was an artery entering at the outer side in a state of ossification, which was a condition affecting other parts of the blood vessels. The paper contained also some general observations on morbid appearances.

2. (Vol. XLIX. p. *232—277.*) A writer, under the signature of "Fair Play," communicated to the Philosophical Magazine, some observations in relation to a passage which occurs in my Life of Lettsom (Vol. I. p. 121), stating that "It was Dr. Lettsom who first sent the vaccine lymph across the Atlantic and consigned it to the fostering care of Dr. Benjamin Waterhouse, professor of the theory and practice of medicine in the University of Cambridge, Massachusetts, whence it *spread* through the United States." This is in accordance with what Dr. Waterhouse printed in his Treatise on the Variola Vaccina* published in 1802. Dr. Rhodes, it is said, assigns to Dr. John Chichester, a physician at Charleston, South Carolina, the merit of having received it from Dr. George Pearson, along with the works of Jenner and Pearson. From the statement made, it seems that one boy only, a mulatto, took the disease. To this communication I replied. By it my attention was directed to various letters that had passed between Dr. Lettsom and Dr. Waterhouse. The statement made in favour of Dr. Chichester, with respect to the vaccination of the boy, appears to be well founded, and it is only extraordinary that he did not follow up the practice. Dr. Waterhouse was one of its most zealous advocates—his name is associated with all the earliest writings on the Cow Pock. He was the active promoter of it in America—he was the person to whom the members of the government applied for lymph, and for directions for its use, and to whom also his professional brethren looked for information on the subject. To show Dr. Waterhouse's zeal for, and the very important services he rendered

* How appropriate is this designation as given by the immortal Jenner! Since writing his memoir, my anticipations with respect to the origin of Cow Pox and its identity with Small Pox, have been fully established by Mr. Ceely of Aylesbury, whose most useful labours in this most important field of inquiry merit the gratitude of the members of his profession. I have employed the lymph he has obtained from the quadruped with the most perfect and satisfactory results.

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to, vaccination in America, I appended to my communication to the Philosophical Magazine extracts from various letters that passed between Dr. Waterhouse and Dr. Lettsom.

In 1813, Dr. Lettsom obtained for me the appointment of Secretary to the Royal Humane Society, the duties of which office I performed during seven years. The conduct of some influential members in the committee, and a difference of opinion as to the propriety of its management having arisen, I resigned my office in 1820. The Vice Patrons, their Royal Highnesses the Dukes of Kent and Sussex, and several other distinguished persons, also retired from the Society. I had on this occasion the gratification to receive, as an acknowledgment of my services, a splendid silver vase, bearing a very flattering inscription. When I first became attached to this institution, the reports were of a description any thing but satisfactory in a scientific point of view, and I endeavoured to remedy the defects. It was not, however, until 1816 that I was enabled so to arrange my materials and confirm my opinions as to present an accurate view of the phenomena of suspended animation, and mark with precision the methods most advisable for recovery. In the Report of 1816, I accomplished this object, in which I was particularly assisted by a valued friend, T. J. Armiger, Esq., late Assistant Surgeon of the London Hospital, and author of "Rudiments of the Anatomy and Physiology of the Human Body."

In 1814, the Emperor of Russia visited this country. He had previously condescended to accept the Gold Medal of the Royal Humane Society, as a token of their regard and admiration of his conduct in having successfully assisted to resuscitate a Polish peasant in 1806. His presence in this country gave to the members of the Society the opportunity of presenting an Address to his Imperial Majesty; and a deputation, consisting of Earl Brownlow, Sir A. Hume, Bart., the Attorney-General (Sir Wm. Garrow) Mr. Samuel Whitbread, Dr. Lettsom, Mr. Angerstein, and several others attended at the Pulteney Hotel, on June 19, 1814. It fell to my lot to introduce the Members of the Deputation to the Russian Sovereign, who received us all with the greatest cordiality and satisfaction. The address presented was founded on one I had drawn up for the occasion, and I could not help thinking it horribly mutilated by the various alterations made by a Sub-Committee appointed for its revision. In 1818, I received the Society's Medal for the Restoration of a case of Apparent Death. In this year, the Society experienced the loss of one of its Founders, a gentleman well known as a physician, a moralist, and a successful writer in various branches of literature and science—Dr. Thomas Cogan.

In the Annual Report, I printed a Biographical Memoir of this amiable

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and kind-hearted man, and gave an enumeration of his different writings. In 1818, I also supplied an *Appendix on Suspended Animation and the Means of Prevention* to Mr. R. H. Black's Translation of "Orfila's Directions for the Treatment of Persons who have taken Poison, and those in a state of Apparent Death," &c. In 1819, the Chevalier Aldini, Professor at the Imperial University of Wilna, and the nephew of the celebrated Galvani, paid his second visit to England. One of the chief objects of his journey was to enforce the necessity of the employment of Galvanism in this country, in cases of Suspended Respiration. To facilitate this, he made application to me, as an officer of the Royal Humane Society, and we agreed to institute a series of experiments on the subject. These were conducted at my house, and many were performed in the presence of his Royal Highness the Duke of Sussex, who took much interest in this inquiry. The result was, the publication of a work entitled, "*General views of the application of Galvanism to medical purposes; principally in cases of suspended Animation.* The original, as well as the translation of this work passed through my hands, and was subjected to some alterations by me; but the stay of the Professor in this country was too short to arrange the subject in a complete manner, and the inquiry was not carried out to the extent which, in my opinion, it still deserves.

My connexion with the Royal Humane Society was the means of my introduction to his Royal Highness the Duke of Kent. He was pleased to say that until I explained to him the phenomena of respiration, and the condition of the body under the suspension of this function, he had not comprehended the subject, nor sufficiently estimated the importance of directing the attention of scientific men to its consideration. The zeal which so eminently characterized his Royal Highness in the cause of charity, his desire for the advancement of science, the improvement of society, and increase of the happiness of mankind, rendered him most sensibly alive to the interests of an Institution the object of which was of no less importance than the preservation of human life. I had many interviews with his Royal Highness, and an extended correspondence on this subject. He became solicitous for my welfare, and honoured me with many public and especial marks of his regard and consideration. He first nominated me one of his Surgeons extraordinary, then Surgeon in ordinary, and upon his marriage wrote to me from Claremont and appointed me Surgeon to the Duchess. Upon the birth of the Princess Victoria, His Royal Highness was pleased to entrust to me, in conjunction with his Domestic Physician, Dr., now Sir Isaac Wilson, my old and much esteemed friend, the selection of a proper subject from whom the Vaccine Lymph for the inoculation of the Princess was to be ob-

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tained. This honour was conferred upon one of the children of the late John Elliott, Esq., of Pimlico, who married a daughter of my dear friend, Dr. Lettsom. I attended at Kensington palace, and there vaccinated her present Majesty, to the entire satisfaction of her illustrious parents. Not many months after this event, the hand of death deprived me of my patron, and threw the nation into mourning. Previously, however, his Royal Highness, at one of those conferences which he frequently did me the honour to hold with me upon various affairs, both of a public and of a private nature, remarked to me that I ought to be acquainted with the Duke of Sussex, observing, " I have been educated in the field; my brother in the closet." I was accordingly introduced to his Royal Highness the Duke of Sussex, and thus commenced my connexion with the library at Kensington palace.

In the course of a conversation with the Duke of Sussex on some literary or professional topic, (I do not now recollect the subject) I made reference to a work which His Royal Highness thought he had in his library, but upon endeavouring to find it, and on my accompanying His Royal Highness into one of the rooms for the purpose, I could not but remark upon the irregular manner in which the books were placed, there being nothing like arrangement whatever, either as to the nature of, or subjects to, which they belonged. I immediately suggested to His Royal Highness that, in apartments of such extent and so arranged it would be exceedingly easy to devise a plan by which every book upon a given subject might be found even without the aid of a catalogue, and at the request of His Royal Highness I drew up a plan forming the library into certain divisions and appropriating these to certain rooms which then contained the library. I submitted this plan to his notice—it was discussed and approved; it was then handed back to me with the expression of a wish on the part of His Royal Highness that I would undertake to carry it into effect, and a permission to occupy his servants in any way I thought proper for the purpose. I confess that this proposition was to me very unexpected. I was not in a condition to decline such a task, nor was I scarcely warranted in devoting the time that would be requisite, away from my professional duties which demanded all my care and attention, for I had then, at the suggestion of my princely patrons, removed from the Medical Society's House in Bolt Court, Fleet Street, and taken a residence in Spring Gardens. I was, therefore, a candidate for practice, and to my success in this I had to look for the support of my own necessities, and that of an increasing family, for I had now been most happily married some years. I did not, however, know how to reject the proposal and I accordingly undertook it. My love of books and the

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countenance of His Royal Highness led me cheerily on. I found the collection in many particulars very imperfect—it contained at that time about 6000 volumes and when I retired from its management it amounted to nearly 40,000. The application I devoted to this pursuit is almost incredible, for I did not permit it to interfere with my professional concerns but as little as possible. I had but few hours for rest and I am now surprised that I did not entirely destroy my health. Labouring under many disadvantages from the imperfect manner in which my early education had been conducted, I had often great difficulties to overcome; but I had the happiness of enjoying the friendship of a large circle of literary friends to whom in every case I could apply and obtain the necessary information. It has been truly said by D'Israeli that "there is a fascination in literary labour, the student feeds on magical drugs." I felt on many occasions the truth of this observation, and had it not been so, I most assuredly should never have undertaken, not only to arrange a large library, to fill up what was wanting, and to inquire into the best editions of all classes of books; but also to undertake to write a particular account of the treasures which were there collected together in the royal residence. This work, however, I accomplished, and published the first volume in two parts in the year 1827. It was entitled *Bibliotheca Sussexiana: A Descriptive Catalogue, accompanied by Historical and Biographical Notices, of the Manuscripts and Printed Books, contained in the Library of His Royal Highness the Duke of Sussex, K.G., &c. &c. &c. in Kensington Palace.*

The *first* part consisting of 294 pages gives an account of all the theological manuscripts; many of them are exceedingly curious and valuable. The variety of languages in which they are written, rendered the work exceedingly laborious to me, and I spent many an hour even in acquiring a knowledge of the alphabets of some of them. I have described fifty-one Hebrew manuscripts, four of which are the Rolled manuscripts of the Pentateuch, and three of the Phylacteries. Of Greek manuscripts there are 12; one of which is a New Testament, of the 13th century with curious illustrations. The Latin manuscripts are 148 in number, embracing various copies of the Old and New Testament, some in verse, and a remarkably fine Psalter of the 10th century, together with several fine Books of Offices. There are 34 French; 9 Italian; 2 Spanish; 1 German; 8 Dutch; 14 English; 1 Irish; 4 Arabic; 1 Armenian; 3 Pali; 3 Singhalese; and 6 Burman manuscripts. Of all these I have given an account and added historical and antiquarian notices. I have also, in order to illustrate the circumstances under which they were written, given, as far as my researches would enable me, biographical sketches of the authors or transcribers, including a detailed

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account of 47 persons. The work is enriched with 14 plates in illustration, and a portrait of His Royal Highness engraved by William Skelton, from a painting made for me by J. Lonsdale in 1824.

The *second* part of this work forms a large volume of 516 pages, and gives an account of a portion of the Printed Theological books contained in the Library. It extends only to the Latin version of the Holy Scriptures, for I have arranged the different versions according to their antiquity. In this volume will be found an elaborate account of the 5 larger Polyglotts and all the pieces connected with them; of the 5 lesser ones and the celebrated Polyglott Pentateuch, printed at Constantinople in 1546. Also of 7 Polyglott Psalters, 4 Polyglott portions of the Old Testament, 4 Polyglott New Testaments and 2 portions of the same. Of the Hebrew Bibles I have described 74 editions, and 17 Hebrew Samaritan and Hebrew Pentateuchs; also 10 portions of the Old Testament in Hebrew, some of which are of the greatest rarity. The Greek Bibles amount to 28. There are 10 portions of the Old Testament in Greek and a Pentateuch. Of the Latin Bibles, a class of extraordinary richness, there are no less than 218 editions, and there are 6 various portions of the Old Testament in Latin. These are all treated of in the same manner as the manuscripts, and biographical memoirs are given of 125 of the most celebrated editors, printers, &c. *Fac similes* are also given of the rarest specimens of typography. I dedicated this work to His Royal Highness, and presented to him a copy, in which the illustrations were depicted in gold and colours after the manner of the original, forming a most splendid work. Fifty copies were taken off upon *large paper*, and are deposited in the Public Libraries, in the collections of crowned heads, and in those of a few of the dignitaries of the church and of the choicest bibliographers. My original intention was to have described the whole of the library in the same manner; but this would have been an endless work. I then determined to confine myself to the theological division. There are, however, so many accounts of portions of this division executed with so much greater ability than I could lay pretension to, that I abandoned this idea, and have only just completed my task by the publication of another volume in 1839, which contains an account of the remaining versions of the Holy Scriptures. This now constitutes, I flatter myself, a tolerably perfect account of the known versions, arranged in a chronological order, and accompanied by historical and biographical notices after the manner of the preceding part of the work. It contains a variety of information perfectly new upon the subject, and some curious particulars relating to our English versions derived from the manuscripts deposited in the British Museum, the State Paper Office and the Chapter House. This volume gives an account of

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1151 works in the following versions: Coptic, Basmurico-Coptic, Æthiopic, Armenian, Irish, Syriac, Arabic, Anglo-Saxon, Gothic, Georgian, Slavonic, German, French, Italian, Spanish, English, Polish, Swedish, Danish, Bohemian, Dutch, Hungarian, Grison, Wendish, Welsh, Lapponese, Malayan, Portuguese, Manks, American Indian, Finnish, Esthonian, Gaelic, Cingalese, Hindostanee, Bengalee, and Chinese. Of the New Testaments (the Polyglott editions having been described in the previous volume) there are copies in the following languages: Hebrew, Greek, Latin, Coptic, Armenian, Irish, Syriac, Arabic, Anglo-Saxon, Gothic, Georgian, Slavonic, German, French, Italian, Spanish, English, Swedish, Danish, Dutch, Wendish, Welsh, Basque, Turkish, Lapponese, Malay, Manks, Cingalese, Hindostanee, Bengalee, Telinga, Damulic, Chinese, Calmuck, Amharic, Mohawk, Greenlandish, and Esquimaux. This volume contains 101 biographical notices, and consists of 588 pages. It is impossible here to enter upon any further notice of the work. As far as the opinions of the best scholars and most able bibliographers have been expressed, I am led to believe that my labours have been esteemed, and that I have not unsuccessfully toiled in this branch of literature. The first part of my work excited the attention of foreign writers, and various reviews of it were published. It obtained for me also an honour I much value, as it is never given but for merit. From the University of Göttingen I received the diploma of Doctor of Philosophy which was conferred on me, Nov. 7, 1826.

During the whole of the time thus devoted to the library of His Royal Highness the Duke of Sussex, I was not inattentive to professional duties or professional literature, and perhaps it would be difficult to name a single anatomical, physiological or medical work of any importance, which has been published during that period that I have not examined or perused. By those who know me intimately this will readily be credited, others may be sceptical as to its truth; but the distinguishing character of my life has been an appropriation of every hour to the attainment of information, or the exercise of literary or professional labour. I cannot reproach myself with having ever spent an idle day, and this I reflect upon with the greatest satisfaction. My love of books is unabated, and I participate in the fullest extent in the feelings expressed by many who have referred to the delight attendant upon reading and study. Seneca says, "the mind is nourished at a cheap rate; neither cold nor heat, nor age itself, can interrupt this exercise; give, therefore, all your cares to a profession which ameliorates even in its old age!" Heinsius writes, that he no sooner sets foot in his library and fastens the door, but he shuts out ambition, love, and all those vices of which idleness is the mother, and ignorance

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the nurse; and in the very lap of eternity, among so many illustrious souls, he takes his seat, with so lofty a spirit that he then pities the great who know nothing of such happiness.* Beaumont and Fletcher have expressed a similar feeling:—

> "That place that does contain
> My books, the best companions, is to me
> A glorious court, where hourly I converse
> With the old sages and philosophers."

The excellent South observes, "No man was ever weary of thinking. All pleasures that affect the body, must needs weary, because they transport; and all transportation is a violence; and no violence can be lasting, but determines upon the falling of the spirits, which are not able to keep up that height of motion that the pleasure of the senses raises them to: and, therefore, how inevitably does an immoderate laughter end in a sigh? which is only nature's recovering itself after a force done to it." And in another place he observes, "Diligence is to the understanding, as the whetstone to the razor; but the will is the hand that must apply one to the other." How rapturously does Seneca speak of his books: "Those," (says he) "are friends, no one of whom ever denies himself to him who calls upon him, no one takes leave of his visiter till he has rendered him happier and more pleased with himself. The conversation of no one of these is dangerous, neither is the respect to be paid to him attended with expense. You may take what you will from them. What happiness, what a glorious old age awaits him who has placed himself under the protection of such friends! He will have those whom he may consult on the most important and the most trifling matters, whose advice he may daily ask concerning himself, from whom he may hear the truth without insult, praise without adulation, and to whose similitude he may conform himself.† Zimmerman was of the same opinion.

* Plerumque in quâ simulac pedem posui, foribus possulum abdo, ambitionem autem, amorem, libidinem, &c. excludo, quorum parens est ignavia, imperitia nutrix; et in ipso æternitatis gremio inter tot illustres animas sedem mihi sumo, cum ingenti quidem animo, ut subinde magnatum me misereat qui felicitatem hanc ignorant!

† Horum nemo non vacabit, nemo non venientem ad se beatiorem amantioremque sui demittit .... Nocte conveniri et interdiu ab omnibus possunt ... Nullius ex his sermo periculosus erit, nullius sumptuosa observatio ... feres ex his quidquid voles ... quæ illum fælicitas, quam pulchra senectus manet, qui se in horum clientelam contulit? habebit cum quibus de minimis maximisque relens deliberet, quos de se quotidiè consulat, a quibus audiat verum sine contumeliâ, laudetur sine adulatione, ad quorum se similitudinem effingat.

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"Reading," (he says) "brings us, in our most leisure hours, to the conversation of men of the most enlightened genius, and presents us with all their discoveries. We enjoy, in the same moment, the company of the learned, and the ignorant; of the wise man, and the blockhead; and we are taught how to avoid the foibles of the human mind, without having any share in their bad effects." In short, as Robert Hall has written, "Knowledge, in general, expands the mind, exalts the faculties, refines the taste of pleasure, and opens numerous sources of intellectual enjoyment. By means of it we become less dependent for satisfaction upon the sinister appetites, the gross pleasures of sense are more easily despised, and we are made to feel the superiority of the spiritual to the material part of our nature. The labour of intellectual search resembles and exceeds the tumultuous pleasures of the chase, and the consciousness of overcoming a formidable obstacle, or of lighting on some happy discovery, gives all the enjoyment of a conquest, without those corroding reflections by which the latter must be impaired." The subject is inexhaustible, and I must pursue it no further; to return, therefore, to my professional career:

Whilst a resident at the house of the Medical Society of London, I delivered four courses of lectures on anatomy and physiology. They were elementary, and designed for amateurs as well as students. I was and am still, perhaps, an enthusiast in my profession; nothing could exceed my devotion to anatomical pursuits. I held with Lettsom, that to prevent the acquisition of a knowledge of anatomy was to commit a *felo de se* of individual felicity. Most wonderful indeed is this composition of man. ***Miraculum maximum est hæc hominis compositio.**** I was most eager to promote this knowledge in every way in my power. I was desirous also of connecting such studies with classical literature, with mathematical philosophy, with chemistry, with natural history, with a knowledge of different countries, and an acquaintance with different languages, as necessary to the melioration of those powers of reasoning which are to be called into activity in the pursuit of a profession, as they are essential to the perfection of the character of a general scholar, and an accomplished man.†

In 1816 I assisted to form a Dispensary for the treatment of the Diseases of Children, and was appointed the senior surgeon. I retained this office until my removal to Spring Gardens, in 1819, when I resigned my appointment. The Institution commenced on St. Andrew's Hill, Doctors' Commons, and is now known as the Royal Infirmary for the Diseases of Children, situate in Waterloo Road.

* Servetus. † See Young's Introduction to Medical Literature.

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In 1819 I was chosen to deliver the anniversary oration at the Medical Society of London. The subject I selected was *Medical Jurisprudence*. It is not a little remarkable, that at this period this subject did not form a topic of education in any medical school in the metropolis. Important as it must be admitted to be, it was only in the medical school of Edinburgh that any lectures on medical jurisprudence were given, and those did not extend to a minute consideration of it. Looking upon the frequency of the occasion on which the physician, the surgeon, or the general practitioner, is called upon to give evidence in a court of justice, and reflecting upon the great value of his testimony as affecting not only questions relating to personal property, but also of individual safety, it is truly astonishing that forensic medicine should have been thus neglected in this country. Deeply impressed by the necessity of such a consideration forming a regular part of professional education, I ventured to address my fellow members upon this head, and endeavoured to point out the importance of calling public attention to it. The Germans and the French appear to have paid the earliest and deepest regard to it, and there are several valuable treatises on the subject in their languages; but, as it must be seen, that the jurisprudence of other countries varies considerably from that of our own, they are in a great measure inapplicable to us. The contrariety of evidence given on several trials that might easily be referred to, will serve to demonstrate the importance of an attention to medical jurisprudence. The Germans designate it State Medicine, and divide it into that which relates to judicial cases and that which relates to the preservation of the health of the community, called by the French Hygiène. The arrangement of the judicial cases into the criminal, civil, and ecclesiastical, as belonging to their particular courts, opens a wide field, and involves a consideration of great extent and variety. The arrangement of these was glanced at in the oration, an abstract of which was published in the London Medical Repository (vol. xi. p. 520,) at that time edited by my friend the late amiable Dr. Uwins.

In the oration I confined myself to treat of some of the most prominent subjects, and those upon which fixed opinions might be then regarded as *desiderata* in medical jurisprudence. The labours of many enlightened professional men have, since this time, been dedicated to these subjects, and considerable progress has been made in the inquiry. The subject now forms a regular portion of medical education which renders it unnecessary for me to extend this notice of the oration. I shall, therefore, merely observe, that, under the division of death from corrosive poisons, I adverted to the symptoms by which detection of such an administration could generally be made, and instanced the almost constant presence of violent pain in those

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cases. This symptom, however, is sometimes absent, and I narrated the case of a young lad of nineteen years of age, to whom I was called, who had swallowed half an ounce of the white oxyde of arsenic, and in whom no pain whatever seemed to be experienced. He survived seven hours, suffering from sickness, thirst, profuse secretion of saliva, extreme coldness of the body and limbs, pulse very small and quick. He never complained of pain, nor did he experience any upon pressure on the region of the stomach. A few minutes before his death he placed his hand upon the pit of his stomach and complained to those around him of a sensation of heat. His sensorial functions were not in the least degree disturbed. Upon examination of the body the stomach was found in a high state of inflammation, and the mucous easily separable from the other coats of the organ—it was studded with small particles of the metallic poison, and was very much altered in its texture, being of a pulpy nature. The duodenum and different portions of the intestinal canal were also highly inflamed.* One of the chief objects of my oration was to point out the lesions of texture, their seat, extent, and character, attributable to different kinds of poison. The writings of Brodie, Orfila, Magendie, Beck, and Christison, have done much to illustrate this important investigation.

The connexion between medical science and the well-being of civilized society has often been illustrated, but never treated of as a distinct branch of inquiry. This, however, it justly merits, and any competent professional man would confer great benefits not only upon the members of his own profession, but also on legislators and senators, who would take up this subject in an extensive manner, and submit it to a proper digest and methodical arrangement. Dr. Maunsell, in a late discourse delivered before the Royal College of Surgeons of Ireland, has shown that the province of medicine is not limited to the observation and cure of disease—it bears a still more important relation to social organization—it aims at the preservation of the health of the community, by foreseeing and preventing the causes of derangement in the frame—all the moral agents to which the human body is subject come under the consideration of the medico-political enquirer. It is not a little singular that the ancients have paid more attention to these subjects than the moderns—hence the establishment of their gymnasia, their baths, their aqueducts, their sewers, &c., all of which demonstrate the anxiety of the rulers for the preservation of health.

In 1819 I was elected surgeon to the Asylum for Female Orphans, one of our oldest, most respectable, and best conducted charitable institutions;

* A case of poisoning by arsenic, unattended with pain, is also reported by Dr. Laborde, in the Journal de Médicine, tom. 70, p. 89.

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and to this establishment I am still attached. Soon after I removed to the west end of the town I was solicited to connect myself with a Dispensary, situated in Villiers Street, Strand, called the Royal West London Infirmary, which was principally established by Dr. Golding, of St. Martin's Lane. An hospital, now known as the "Charing Cross Hospital," was contemplated for this quarter of the town, and no one can question the necessity of such an establishment in a place where so many accidents occur, and where disease must be rife from the extent of population in the district. I fell into the views entertained by the managers, or I should rather say manager of this Dispensary, and I lent every aid in my power to carry the proposed measure into effect. I spared no labour to promote this institution; and, after toiling in various ways which it would be as tedious as unnecessary to detail, the object was effected. When, however, this was accomplished, other and more responsible duties devolved upon me, and I eagerly sought for a difference of arrangement and management of the institution. This is a subject on which I feel the greatest repugnance to enlarge, for it is not my nature either to cavil or to abuse—life is too short—time wastes too quickly, to argue the matter over again

> "When every day that comes, comes to decay
> A day's work in us;"
>
> SHAKSPEARE.

Yet,

> "'Tis not my talent to conceal my thoughts,
> Or carry smiles and sunshine in my face,
> When discontent sits heavy at my heart."
>
> ADDISON.

Knox truly observes, that "a man of sensibility and honour cannot take too much pains to vindicate his character from any open and direct calumny; but the same spirit which leads him to that manly conduct, will induce him to leave the dirty dealers in scandal to themselves, and to the misery of their mean occupation." I have, therefore, in an *Address to the Governors and Subscribers of the Charing Cross Hospital, on some extraordinary proceedings that have lately taken place at that Institution, and on the management of the Hospital in general,* published in 1836; and in a letter circulated to the Governors in January 1837, detailed all the circumstances connected with a transaction which deserves no other title than that of a conspiracy on the part of certain individuals, to defraud me of that to which my previous labours had justly entitled me. I have given in the memoir of my excellent friend and colleague, Dr. Sigmond, many of the particulars relating to this

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base transaction, and shall only say, with Swift, "they are despised by all good men; and I like myself nothing less for being the object of their hate." Injuria autem nulla capitalior est quàm eorum, qui, cum maximè fallunt, dant operam ut viri boni videantur.* At the Charing Cross Hospital, however, I delivered various lectures on surgery, theoretical, practical, and clinical. I also gave an entire course on anatomy and physiology, and these were illustrated by an extensive series of preparations, most of which had been made by me, and are now deposited in the collection of my son, Dr. W. V. Pettigrew. Since my connexion with the Charing Cross Hospital has ceased, I have devoted myself entirely to private practice, and I have reason to be thankful for being relieved from the weight of a serious responsibility, where I possessed not authority sufficient to ensure full attention and relief to those who submitted themselves to my care.

In 1817 my friend Mr. Coleridge projected and arranged the Encyclopædia Metropolitana, and among other persons solicited to contribute to the work, I had the honour to receive an application for the department of medical science. At that time my attention was very much directed to natural history and comparative anatomy, in connexion with Dr. W. E. Leach, of the British Museum. I made arrangements with him to write in concert the natural history, and comparative anatomy and physiology, under an order corresponding to that put forth by Cuvier in Le Règne Animal; but the distressing illness with which Dr. L. was shortly after afflicted, and the consequent loss to society of this most distinguished naturalist, prevented this design from being carried into effect. I entered into a contract for all the dead animals belonging to Exeter Change menagerie, and my dissecting room occasionally exhibited a most extraordinary scene, for mortality would often be very general among the beasts, and it was not an unfrequent thing to witness a lion, a tiger, a leopard, a bear, monkeys, and various birds under the investigation of the anatomist. The supply indeed exceeded that which I could attend to, and I was compelled, in a great measure, to abandon my active pursuit of comparative anatomy. The whole of the medical department of the Encyclopædia Metropolitana was, however, to have been under my direction, and many of the miscellaneous articles were to proceed from my pen. I, however, only furnished two of these which were printed in the second part of the work in 1818. Upon a failure of the proprietor occurring, the publication passed into other hands, and was placed under a different editorship. The articles I wrote were:

1. *Albino.* In this I have given a particular description of this curious va-

* Cicero.

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riety, both in the human species and in various quadrupeds and birds, together with the opinions that have been entertained respecting it by several naturalists and physiologists. I have combated the opinions expressed by some who have considered it as connected with disease. There is defective organization, but there is no morbid action. The phenomena which result from the absence of the black pigment, &c., in the eye of this variety of the human species, point out, in the clearest manner, the uses to which these parts, as far as connected with the organ of vision, are subservient in the animal economy.

2. *Aliment.* This is an extended article, occupying upwards of twenty-six closely printed columns. It comprehends, I believe, the most complete account of the various kinds of food of a solid and a fluid nature that have been employed as aliment in all countries. After noticing the etymology of the term and its different application by various writers, I have entered upon a consideration of the subject, regarding as aliment every thing which has been appropriated as nutriment by the various classes of organized existence. The correspondence of structure of the human frame to the food best adapted to recruit diminished strength, and repair the waste of the animal system generally, is pointed out; hence man is shown to be formed to live both on animal and vegetable food; but he is capable of subsisting entirely upon either. The effects of digestion upon the different substances is slightly noticed, and their relative digestibility shown. The power of habit on the animal economy is strikingly manifest in matters relating to diet. The animals and vegetables that have been employed as articles of food are arranged according to the system of Linnæus, and the authorities for their use are appended to the respective articles in the list which includes many that will excite the surprise of the reader. There are nearly 100 species in the mammalia. The birds are not less numerous. Of the amphibia there are few. The fishes are abundant. The other animal divisions comprehend but few species. The vegetable substances are still greater in number, and those are arranged under the following heads :—Herbs, roots, fruits, seeds, lichens and sea weeds, and mushrooms or fungi.

As condiments must be looked upon as belonging to the Materia Alimentaria, they are also considered in this article, agreeably to the division made by Dr. Richard Pearson, of saline, aromatic, oily, sweet and acrid. Of the drinks, I have noticed simple water—

> " The chief ingredient in heaven's various works;
> Whose flexile genius sparkles in the gem,
> Grows firm in oak, and fugitive in wine;
> The vehicle, the source, of nutriment
> And life, to all that vegetate or live."
>
> ARMSTRONG.

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Animal secretions used as drinks—milk, whey, &c. Infusions and decoctions of animal substances employed principally in cases of disease; infusions and decoctions of vegetable substances, tea, chocolate, &c.; and fermented liquors, beer, wine, ardent spirits, &c.

In 1825 I communicated, among other papers to various medical journals, one to the *London Medical Repository*, (vol. xxiii. p. 353,) *A Case of Extirpation of the Tonsils*. This operation is not frequently performed in this country, and it is more commonly done by the ligature than the knife. I have never been able to discover the grounds on which this preference is founded; for the ligature has often produced considerable inflammation, which has extended to the larynx and other parts, and I know of no serious result to be apprehended from the employment of the knife judiciously applied. The case related in the paper published in the *Medical Repository*, was one of extreme urgency, for the tonsils had become so much enlarged that their surfaces were in close contact; and when the curtain of the palate was depressed, the uvula completely obliterated the passage into the throat—hence the child (a girl of twelve years of age) was constantly threatened with suffocation. She was unable to swallow solid substances, and fluids could be taken only with great caution and difficulty. Her speech was rendered indistinct, and was strongly nasal in its sounds. When asleep, the noise made by her respiration was truly frightful. The mode of removal of these enlarged glands adopted by me in this case was to plant a hook into the tonsil, draw it forward, and then pass a thin curved bistoury to the back of the gland, and by one incision, remove the greater portion of it, taking care to turn the edge of the instrument towards the cavity of the mouth, so that no danger whatever existed as to wounding any important vessel. One being thus removed, the same method was adopted with the other tonsil. The hæmorrhage was profuse, but speedily subsided. The patient laid down after the operation, and slept for two hours with greater ease than she ever remembered to have done before; the noise occasioned by her respiration subsided. In four days the cut surfaces had healed, no deficiency of mucus in the throat was apparent, her health and strength recovered, and she was in many respects relieved of her most distressing affection. When this simple mode of extirpation of the tonsils is contrasted with the accounts rendered by Wiseman and other surgeons, one cannot but be astonished at the unnecessarily formidable means that were formerly employed; the enumeration of their caustics, ligatures, &c. inspires one with horror. I prefer the bistoury to any other cutting instrument in these cases, and I have now several times performed the extirpation of the tonsils with it without any untoward circumstance occurring in its execution. The method is so sim-

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ple, the performance of it so easy, and the results so free from danger, that I felt it my duty to lay it before my professional brethren, as an improvement in surgery.

Having in 1831 had access to the Indian Reports relative to the cholera, I prepared and published *Observations on Cholera; comprising a Description of the Epidemic Cholera of India, the Mode of Treatment and the Means of Prevention.* This was prior to the visitation of the disease in this country, and it was satisfactory to me to find the view I had taken of it verified by experience.

In 1833 I communicated a paper to the Royal Society, entitled *A Relation of the Case of Thomas Hardy Kirman, with Remarks on Corpulence.* The subject of this paper (who attended the meeting of the Society) was not remarkable for size or strength at his birth. At six years of age he fractured his thigh, and was confined by the accident to his bed for six weeks, during which time he increased greatly in bulk and in height. The increase was progressive, but assumed greater rapidity during the last year. At this time being within two months of twelve years of age, he measured five feet one inch in height, and weighed one hundred and ninety-eight pounds. He measured round the chest forty-five and a half inches, round the abdomen forty-four inches, round the pelvis forty-eight and a half inches, round the thigh twenty-seven inches, round the calf of the leg eighteen and a half inches, round the upper arm thirteen inches, round the forearm eleven and a half inches, round the wrist seven inches, and across the shoulders nineteen inches. To the case I appended some general observations on the subject of corpulency, a habit of body most frequently met with in marshy districts, (Kirman was born at Barrow Mill, near Barton upon Humber, in Lincolnshire,) and has an apparent relation with the humidity of the climate; it is, therefore, much more prevalent in England than in France or the south of Europe. The paper notices the circumstances of predisposition and the mode of diet favourable to the developement of corpulency; it also glances at the means most likely to abate such an inconvenience.

During the formation of the Duke of Sussex's extensive library, before alluded to, his Royal Highness's attention was much directed to the pursuits of literature and science; and the meetings held at Kensington Palace will long be remembered by many distinguished literati of this and other countries. His Royal Highness did me the honour to attend a series of conversazioni held at my house during several seasons, and thus associating with numerous literary and scientific characters, manifested the warmest interest in every thing relating to intellectual improvement. He also often expressed a desire to adapt the arrangements of the British Museum and other institutions

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to the advanced state of the times. By the resignation of Sir Humphry Davy in 1827, the chair of the Royal Society became vacant, and there was much difficulty in finding a successor. Mr. Davies Gilbert, whose scientific attainments and fortune pointed him out as one well qualified to sustain the character of the Society, was, by the retired habits of his life, unwilling to accept of the distinguished appointment; but at length was prevailed upon to fill the chair until arrangements could be made which might appear more advantageous to the interests of the Institution. It occurred to many Fellows of the Society that his Royal Highness the Duke of Sussex would make an admirable President; that his rank would place him beyond the operation of any jealousies, and that his acquaintance with various modern languages would offer to scientific foreigners many advantages not hitherto experienced. His Royal Highness had also expressed a willingness to throw open his library to the Society, and, in short, to do every thing which could be required of the head of the Society. He also avowed his determination to make many changes in the arrangements of the Society, and approximate it to the necessities arising from the advanced state of science. But his Royal Highness was not yet a Fellow of the Society into which I had been elected in 1827, and I therefore requested of the President to propose his Royal Highness, which he did, and the election was made. I then intimated to Mr. Gilbert his Royal Highness's willingness, in the event of his vacating the chair, to become his successor; but that as I thought it due to the Society as well as to his Royal Highness, that each party should be fully acquainted with what would be required in such a relation, his Royal Highness was willing to be nominated to become a Member of the Council for one year, by which this would be effected—for the Members on the one hand would ascertain his Royal Highness's fitness for the office, and his Royal Highness would, on the other, learn what duties would be expected to be performed by him, and would also make acquaintance with those who take the most active part in the concerns of the Society. Mr. Gilbert was pleased at this arrangement and undertook to make it known to the Council; but he afterwards informed me, that the Council thought it would be *infra dig.* on the part of the Royal Duke, and they feared also, that his presence might destroy their independence of character. Thus the intended arrangement broke off, and no further steps on my part, of any description, were taken in relation to it until Sept. 1830, when I received a letter from Mr. Gilbert, stating that it had been his intention to retire from the chair for some time past, and that if his Royal Highness was not indisposed to come forward, or to be proposed in the Council, he was ready to take all the means in his power for rendering it successful. On the 20th Sept. I com-

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municated to Mr. Gilbert his Royal Highness's readiness to be nominated as President. Mr. Gilbert then proposed to make it known to the Members of the Council, and thence arose, perhaps, the most violent opposition ever experienced in the Society since the days of Bishop Horsley. The majority of the Council and several of the most influential of the Fellows of the Society invited Mr. now Sir John Herschel, to permit himself to be nominated for the office in opposition to the Duke; and a public advertisement to this effect appeared with the signatures of between 70 and 80 Fellows. I laid this advertisement before His Royal Highness, and wished to know whether under such circumstances, His Royal Highness would continue to stand for the office. His Royal Highness's reply to me was, that he had been invited by the President, through me, to accept of the chair—that although a difference of opinion seemed to prevail in the council, yet, as they had made no communication to him on the subject, he could of course know nothing of it, and that he was therefore upon the field. My answer was, that it was then my duty to see that he did not fail, and I accordingly proposed that a meeting should immediately be held of my friends and those favourable to His Royal Highness at my house, to concert measures and secure His Royal Highness's election to the Presidency. I invited His Royal Highness to this meeting; but he declined attending, on the ground that in his absence his qualifications could be best canvassed. The meeting was held, the List of the Fellows gone through, and it was seen that the election could, though not without difficulty, be carried. I daily communicated to His Royal Highness the progress making in the canvass, and on the 30th of November His Royal Highness was elected President. It may appear singular to those who are not Fellows of the Society, that I should here enter upon particulars, or go into a detail of that of which the interest has long since passed over; but it must be stated that the transaction cost me the loss of many friends, that I became extremely obnoxious by the interest I took in His Royal Highness's success, and that my zealous efforts were ascribed to selfish views and interested purposes. It was publicly said that I forced His Royal Highness upon the Society and that the council had been assured of this from authority, &c. Satisfied that the measures taken by me were solely intended for the benefit of the Society, and in entire accordance with the wishes, feelings, and concurrence of His Royal Highness, I heeded not the attacks which were constantly made upon me, nor the insults I experienced. I was not anxious for any position in the Royal Society or I might have secured it at the same time with His Royal Highness's election. My name was indeed proposed as a Member of the New Council, in support of His Royal Highness. The following morning I

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went to Mr. now Sir John Barrow, of the Admiralty, and requested of him to permit me to substitute his name for mine as I was unwilling to leave it in the power of any one to say that I had not acted upon the most disinterested motives. I regret, now, that I was so scrupulous, for it would probably have prevented that breach of communication which has since taken place between His Royal Highness and myself, a communication of the most confidential nature, and a professional intercourse for 15 years, the breaking up of which, has caused me much distress and anxiety. With this faithful statement I quit the subject.

In 1834, I had an opportunity of seeing two cases of Hydrophobia, which were received into the Charing Cross Hospital. One of these was under my own immediate care, and I succeeded in abating the violence and suspending the paroxysms of the disease by the employment of tobacco, though without ultimate success. I know of no case of Hydrophobia arising from the bite of a rabid animal ever yielding to any remedy. The only means we can adopt are those of preservation which happily are certain in their effect. I published a pamphlet on these cases under the title of *Substance of a Clinical Lecture on a case of Hydrophobia, delivered at the Charing Cross Hospital, Nov. 24, 1834; to which are appended the particulars of another case admitted Oct. 21, 1834.* I have since collected considerable materials for a complete history of Rabies in the dog and other animals, and of Hydrophobia in the human species, which it is my intention at no very distant period to lay before the public. To make the experience to be derived from the practice of the hospital as beneficial to mankind as all public institutions ought to be, I proposed to my colleagues to unite with me in the publication of regular reports arranged in the manner that has been since adopted in Guy's and St. Thomas's Hospitals; but they were not eager to second my views. I proposed therefore, transmitting to the Medico-Chirurgical Review, conducted by Dr. and Mr. Johnson, a regular account of all the most important cases which came under my care, one number of which appeared in Jan. 1835, being an account of various cases of *Fractured Ribs—Fractured Femur in which union did not take place—Compound Fracture of the Tibia and Fibula—and of the Removal of a Steatomatous Tumour.*

In 1834, I published in a quarto volume *A History of Egyptian Mummies and an account of the worship and embalming of the sacred animals by the Egyptians; with remarks on the funeral ceremonies of different nations and observations on the mummies of the Canary Islands, of the ancient Peruvians, Burman Priests, &c.* This work was dedicated by permission to His Majesty William IV. My intention had been directed to this curious subject of inquiry from an intimacy with the celebrated traveller Belzoni.

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With him I had the opportunity of examining three Egyptian mummies, and although the state of their preservation was not of the best description, their condition was sufficient to awaken my curiosity. The discoveries of Dr. Young and the probability afforded by them of becoming acquainted more intimately with the learning and science of the ancient Egyptians through the medium of the hieroglyphics, served to stimulate me in the inquiry, and upon the sale in 1832, of the antiquities belonging to Mr. Salt, the English consul in Egypt, I availed myself of the opportunity of purchasing a specimen upon which I could proceed to examine into the subject, and since that time I have enjoyed unusual opportunites of pursuing the research. The specimen to which I have alluded was examined by me in 1833; it excited the greatest interest from the perfect manner in which the process of embalming had been effected. The detail of the particulars respecting this example formed the basis of my work, and induced me to follow out the subject in all its branches. Several friends gave to me opportunities of examining Egyptian mummies, nor were public institutions less disposed to aid me in the inquiry. The museum of the Royal College of Surgeons contained a specimen which I was permitted by the president and council to examine, and to deliver a lecture upon, before the members of the college, and an auditory as numerous as the theatre could contain. I was also invited to the examination of a specimen in the London University College, and another at the Mechanics' Institution. I had assisted Dr. Granville and also the late lamented traveller Mr. John Davidson, to unroll their specimens; and I was permitted to examine those belonging to Mr. Saunders, Dr. John Lee, &c. I had thus extraordinary means of acquiring information of this description, and the opportune arrival of Mr. now Sir Gardner Wilkinson in this country, after a residence in Egypt for nearly 13 years, and the first hieroglyphical scholar of the day, afforded to me the means of verifying that which to me was still uncertain, and of acquiring information not to be obtained from any other source. My communication also with other friends, Egyptian travellers, Mr. James Burton, Captain Mangles, the Earl of Munster, Dr. Lee, Dr. Richardson, Mr. Fisher, Mr. Bowes Wright, Dr. Forbes, Mons. Rifaud, Mr. Madden, Mr. Burgon, Capt. Henvey, Mr. Walne, Signor Athanasi, &c. &c., completed my opportunities, and I thus ventured to draw the public attention to a most interesting branch of archaeological inquiry.

In my history of Egyptian mummies, I have treated of the etymology of the term mummy, and of its employment as a drug. I have considered the theology of the ancient Egyptians and the funeral ceremonies of different nations, and I have described the Egyptian tombs, the mummy pits, &c. pre-

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vious to considering the modes of embalming. I have detailed the different kinds described by ancient authors, and illustrated these, and added to their descriptions by my own examinations. I have described two species of insects found in the mummies hitherto unknown in any collection of Natural History, and I have deposited specimens in various museums that they may be known to future enquirers. I have examined into the nature of the medicaments employed in embalming and in describing the different kinds of bandages found upon the mummies, I have shown that they are almost entirely of linen and not of cotton, as formerly supposed. I have noticed the different substances which have been found in the bodies, or among, or over the bandages, and I have shown the manner and stages of their application. The painted cases, sarcophagi, &c. in which they are enclosed have enabled me slightly to consider the Egyptian mythology and also to discover the names and grades of the individuals embalmed. To verify these I have necessarily entered upon the subject of hieroglyphical literature as detailed in the researches of De Sacy, Akerblad, Young, Champollion, Rossellini, Wilkinson, Burton, Leemans, and others. I have also given an account of the most remarkable Papyri manuscripts. The physical history of the Egyptians is one of the most interesting parts of the enquiry. My examinations have led me to ascertain with tolerable precision, from the configuration of the skull, the different periods at which the embalments have been made, and to distinguish those of the ancient Egyptians during the earliest period, and those under the subjugations of the Greeks and Romans.

To complete my history, I have ventured to treat of the sacred animals embalmed by the Egyptians, to give a table of these in the divisions of mammalia, aves, amphibia, pisces and insecta, and also of a few vegetables esteemed sacred by the Egyptians. This subject has led me to some extent into the mythology of this ancient people. I cannot flatter myself with having done much in this branch of the investigation; but I have at least collected together a mass of very curious materials which may be advantageously employed by some future antiquarian. To prevent imposition I have given an account of the deceptive specimens of mummies that have been sent forth. Other nations besides the Egyptians were in the practice of embalming or otherwise preserving their dead, and I have narrated the means adopted by the ancient inhabitants of the Canary Islands, the Peruvians, the Sicilians, and the Burmans. The singular account of the practice of the latter in relation to their priests has never before appeared, and I derived my information from an eye witness, Capt. Coke, who kindly communicated to me the particulars. I have devoted a chapter on modern embalmings and the modes adopted in the instances of the Royal Families of this and other

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countries. This concludes my work, which is illustrated with 13 plates, some of which are coloured.

In all the examinations of mummies that I have made I have found varieties. In one which I opened at the Royal Institution in 1837, I found many curious particulars relating to the hieroglyphics and representations of animals. Of these peculiarities and a general summary upon embalming, I have given an account in a printed statement of my lecture, illustrated by wood cuts, in the 2nd volume of the Magazine of Popular Science, published by Mr. Parker.

In 1837 I paid a visit to the Island of Jersey to examine a mummy which had been presented to the museum of that place by a late Egyptian traveller, John Gosset, Esq. This specimen was of great antiquity according to the character of the cases, which were highly ornamented, and upon which I discovered some singular erasures wherever the name of the contained individual occurred. It served to illustrate the practices resorted to by the priests of Egypt whenever a family became extinct, or were unable to continue the payments for the preservation of the tombs or sarcophagi. I found these cases occupied by an individual of a more recent date than the cases, yet not less than 2000 years old. The erasure of the hieroglyphics composing the name of the individual upon the cases was performed at a time when that language was generally understood—it must have been done by the Egyptians. The priests, there is little reason to question, made a traffic of the tombs. Sir G. Wilkinson found that the tomb of Ramesses VII. had undergone many changes; the stucco, on which its present representations are figured, is placed over sculptures of a much earlier period, and he has suggested the probability that, when a family became extinct, so that no one remained to pay the customary claims for the liturgies and other services by which the revenue of the priests was maintained, the tomb was resold to another occupant to indemnify them; and this exchange does not appear to have been confined to the walls of the tomb, but extended even to the sarcophagi and wooden coffins contained within them, for the name of the first inmate has been found to be obliterated, and a second substituted in its place. The names on the walls are constantly found to be erased, and the spaces for names often left in a blank condition, the sale of the building not having been yet effected. I thought I could observe in one part of the outer case of the Jersey mummy something like an attempt to figure some hieroglyphical letters over the place where the name was formerly introduced; the hieroglyphics were of a different character, they were written in red upon a white ground, whilst the original in the same line of inscription had colours invariably intermixed with them. The new hieroglyphics were, howeveer

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not sufficiently distinct to be deciphered. It appears, therefore, that some circumstances, of the nature of which at this distant period it is difficult to offer any probable conjecture, had occurred to occasion the obliteration of the name of a priestess of great rank in the early times of Amunoph III. and placed within her case or coffin, is the mummy of "Pet-maut-ioh-mes, man deceased," as the hieroglyphics on the scarabæus taken from his breast demonstrate. The period at which this exchange took place it is not easy to determine; but judging from the mode of embalment, I should be very much disposed to place it in the Greek period, probably in the time of the Ptolemies, for (excepting a peculiarity in the mode in which the brain had been extracted and its place supplied by an earthy matter, circumstances quite new in the process of embalming) the mode of its embalment corresponds to those in which the names have been decidedly of a Greek character, and upon the cases of which various circumstances would seem to connect the mummy with that people.* This examination proved of essential importance and served to confirm that which I had previously ventured to state with regard to the deities of the Amenti, and their appropriation to particular portions of the body. I communicated an account of this mummy to the Society of Antiquaries, and my paper is printed with illustrations in the 27th volume of the Archaeologia.

In 1836 my attention was directed to a very painful subject, by a gentleman who then filled the office of senior churchwarden of the parish of St. James' Westminster in which I now reside. He felt exceedingly distressed at the condition of the infant pauper children who had been removed from Wimbledon where they were placed out at nurse, and sent to an establishment at Norwood. He requested me to visit several children then in the workhouse, brought home from this place, and I found them in a dreadful state of disease which appeared to me to arise from improper treatment. Several children were presented to me in different states of marasmus, though they had been sent from the parish in a healthy state. Suspecting the treatment of these children to have been (to say the least) in the highest degree injudicious, I suggested to one of the officers of the parish the necessity of examining into all the circumstances, and expressed my readiness to render any assistance in my power. This was submitted to the parochial board, who apparently conscious of not having taken those steps which the urgency of the case required, thought proper to express their anger towards the gentleman who had sought my visit, and interdicted any interference on my part in the matter. Feeling the subject to be one of the

* See Archaeologia Vol. 27. p. 273.

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deepest importance to society, and fearing a still greater loss of human life, (for several children had been already reported dead, and others were remaining at the establishment,) I addressed a letter to Lord John Russell, the Secretary of State for the Home department, detailing to him the condition of those unfortunate children, and stating the views I entertained with respect to the cause of such disease and mortality. Such a length of time was, however, permitted to elapse before any acknowledgment of, or reply to, my urgent letter was given, that I caused an insertion of the account to be made in the Morning Chronicle newspaper, which immediately directed public attention to the state of the infant paupers. The subject was referred by Lord J. Russell to the Poor Law Commissioners, who carefully abstained from either calling me before them to confirm my statement, or examining the churchwarden who had brought the condition of the children under my notice. So strongly, however, was public attention excited, that a question was asked respecting my statement in the House of Commons, and Lord John Russell in reference to "whether any inquiry had been instituted by the Poor Law Commissioners as to the case of the pauper children of the parish of St. James, farmed out at Norwood; and if so, whether on inquiry the statements of Mr. Pettigrew which had gone forth to the public, were borne out?" said, he *could not answer the question from any formal report of the Poor Law Commissioners; but from information he had received, he must certainly say that it was not right to take for granted the statements contained in Mr. Pettigrew's letter on that subject.* To such conduct, no one, possessing the feelings of a gentleman, could possibly submit; and as the Vestry Clerk had, in a letter to the Morning Chronicle, stated that the Poor Law Commissioners had inquired into the facts of the case, and declared themselves perfectly satisfied with the prompt measures pursued by the parish officers, I applied to Lord John Russell for a copy of the report warranting such a statement. This was denied to me, yet Lord J. Russell could dare to question my veracity in the House of Commons! It would occupy too much space to detail here all the particulars which successively occurred in the course of this painful investigation, which I pursued with, I trust, a most justifiable ardour. I felt it due to my own character in the end, to print *A Letter to the Right Hon. Lord John Russell, &c., on the Condition of the Pauper Children of St. James, Westminster; as demonstrating the necessity of abolishing the Farming System.* In this pamphlet I have taken a view of the entire subject, and fully exposed the shameful neglect that had taken place.

My efforts were not entirely useless—they produced many changes in the establishment, a better ventilation, and a regard to temperature—an in-

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crease in the number of the nurses, &c., yet much remains to be done, and the public will read of *inquests* taken on cases of children dying in pauper establishments with deep interest. My objections are to the entire system of farming Pauper Children, unless under Government controul and regulation, and at the expense of Government. I hold it to be bad in principle to allow of any commercial speculation dependant for its success upon the affording of sustenance to human beings; there should be no incentive to traffic in humanity—no temptation should be placed in the way of individuals to make money or derive a profit upon such an object as the support of the poor—human life is surely of too great importance for any experiment of the kind.

I had the satisfaction to receive from some of the Members of the Vestry of St. James, a handsome piece of Plate as a recognition of my services in behalf of the Pauper Children.

The preceding pages, in which I have endeavoured briefly but most faithfully to depict the principal events of my life, and the course of study I have been enabled to pursue, may probably be useful to the medical student as an evidence of what can be effected by a careful appropriation of time even when accompanied by many difficulties. I know an impression prevails that it is impossible for a man who devotes his attention to literary subjects, or the various branches of general science, to become a skilful practitioner. I have particularly noticed this subject in my Memoir of the late Dr. Thomas Young, who justly ranks as one of the most brilliant contributors to the annals of science and literature. I am fully aware that my own professional practice in private life has been more limited than might otherwise have been the case, had my attention to literature and general science been less than it has been. Wealth, however, with me has always been, and I trust will ever continue to be, a secondary consideration. I have never placed it in competition with reputation or the pleasures which result from the exercise of intellectual pursuits; and if I have not been overwhelmed by professional labours, I have at least had it in my power to cultivate learning, and to associate with many of those whose names adorn the pages of our literature and science. The opportunities that have offered to me in this respect have not been neglected, and I have the happiness to rank among my friends a large number of the most distinguished in literature, art, and science. The respect entertained for me by these, constitutes one of my chiefest sources of delight; but it is in the bosom of my family, where I happily find that which is paramount to every thing else, and in attending to the education of my children, I feel that I am best following out the destiny of my nature.

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THOMAS JOSEPH PETTIGREW, F.R.S.

These Biographical Memoirs have been chiefly confined to professional character, and have rarely extended to any notice of a private or personal consideration. In my own Memoir I may, perhaps, be permitted slightly to deviate from the established course—to allude to my own family circle, and publicly to express my admiration and affection for her, whose purity of mind, elegance of taste, and diversified information, united to the most affectionate devotion to my happiness and that of my children, has never failed to afford me a welcome relief and satisfactory consolation amidst all the storms of adversity I have experienced, and the malignant attacks it has been my misfortune to encounter. In the enjoyment of domestic felicity, I have ever found a solace. My trials, however, have been many and severe. Lord Bacon says, "the joys of parents are secret, and so are their griefs and fears; they cannot utter the one, nor they will not utter the other. Children sweeten labours, but they make misfortunes more bitter: they increase the cares of life, but they mitigate the remembrance of death." My family is numerous—I have 7 children—I have had 5 others. There was one who grew up to manhood, to whose memory I shall ever heave the deepest sigh. He was my eldest son, a Lieutenant in the Madras Light Cavalry, and he fell a victim to the climate of India, in 1837, at the early age of 24. He had given great promise of excellence, and was particularly distinguished by his general information and a knowledge of languages. A little work in 3 vols. 12mo. was written and published by him in 1833, under the title of *Lucien Greville*. Itgives the events of his short life, and it has served him for a vehicle to give an account of Indian Scenery and Indian Manners and Customs. I have many pieces of his composition in verse and in prose, but I have not courage enough to undertake the task of arranging them or putting them in a form fit for the public eye. There are many that knew him who would be much gratified by their appearance, for they bear evidence of genius exercised under the direction of the highest moral feeling and excellence—

> "So many graces in so green an age,
> Such wit, such modesty, such strength of mind,
> A soul at once so manly, and so kind."
>
> DRYDEN.

The calamitous loss I thus experienced in a great measure promoted the present work. I have ever held with Madame de Stael, that "le meilleur moyen de calmer les troubles de l'esprit n'est pas de combattre l'objet qui

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les cause, mais de lui presenter d'autres, qui le détournent et l'eloignent insensiblement de celui-là;" and consistently with this, I endeavoured to divert my melancholy, by recurring to various memoranda, the results of my reading, and the notes I had made on the lives and writings of the most celebrated members of the Medical Profession. This work has "grown with its growth," if it has not "strengthened with its strength." In the preface to the first volume I have narrated the principal objects I have had in view in its composition and in its construction. It has now proceeded to the conclusion of the fourth volume, and I should have been glad to have been able to have carried my Memoirs out to a still greater extent; but in truth there is so little taste for literature in the large body of medical practitioners; and there are so few who desire to extend their acquaintance beyond that which appears absolutely necessary for practical purposes, that the countenance given to *Medical Biography* is not sufficient to justify a continuance of the work beyond this volume, on the part of one upon whom there are many pressing and unavoidable claims. I may, perhaps, at some future time be tempted to resume my biographical labours; but for the present they must cease in this expensive form.

The late Mr. John Pearson* justly observed that the biography of Medical Men in Great Britain and Ireland was very defective; that the memorials to be obtained even of those who have distinguished themselves by their labours and writings were few and scanty; and that the friendly hand which has transmitted the details of their professional merits, has seldom proceeded to delineate their moral and social character, and to rescue their private virtues from oblivion. The life of a medical man, who has devoted his time, principally, to the exercise of his profession, must be necessarily barren of such incidents, as would be interesting to the world. It would commonly present an unattractive monotony, scantily chequered by events which are calculated to engage general attention, or to gratify curiosity. His thoughts are usually confined to one class of subjects, and his parentheses of leisure are too rare and uncertain to allow of his engaging personally in transactions, that would draw him into public notice, and make him an object of much attention to any, but those who require his assistance. There may be exceptions to this representation, but they are few in number; and it has been commonly seen, that in the proportion in which a man acquires celebrity for extra-professional acquirements, his reputation, or his employment at least, in his own peculiar department, will be obstructed rather than advanced. Although this conclusion must unfor-

* Life of Wm. Hey, of Leeds.

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tunately be admitted to be too true, yet in proportion as the lives of medical men present but few attractive features to excite the attention of the general reader, they afford to the professional man abundance of matter for reflection, and often sources for imitation. In the volumes of this work will be found the memoirs of 60 professional men, ancient and modern, who have assiduously laboured to establish medical science upon its proper foundation. The connexion of the histories of the various branches of the profession which have been illustrated by these, has appeared to me an useful and a felicitous mode of imparting information. To trace the history of discoveries in any branch of science is of unquestionable utility—to mark the various steps by which knowledge is attained, affords a picture of the operations and powers of the human mind. This exercise acts as an excitement to emulation, and it often serves also to teach us a lesson of humility and to check the pride of human nature. I have endeavoured in the most candid and impartial manner to state the opinions of all, and I hope that in recording my own, I have done so with a becoming diffidence. I have endeavoured to hold up all that is good and great, and to condemn whatever is base and inglorious. An indulgence in calumny and scandal, too much the distinguishing character of the periodical medical press of this day, would speedily have rendered my work most popular; but would have justly consigned its author to the censure and indignation of the wise and good. I am not aware that I have to wish the retraction or erasure of a single passage. I have carefully abstained from personal allusions, and have only noticed personal character where it has been necessary to illustrate professional conduct. Some individuals are remarkable for their disposition to pry into and make the most minute enquiries with the view of lowering an elevated character. Such biographers, in my opinion, do serious injury to society. I feel strongly with an elegant writer, that "the more examples we have of human excellence, the more honourable and advantageous to human nature." This opinion, thus expressed, is, however, not to be taken as condemning or even forbidding a careful investigation of the truth in all cases; but when once it is established, and on the side of virtue, any thing which goes to sap its foundation by critical and hypercritical research becomes not only impertinent but absolutely criminal. "Physicians (says the doctor,) though they see humanity in its most humiliating state, see it also in the exercise of its holiest and most painful duties. No other persons witness such deep emotions and such exertions of self-controul. They know what virtues are developed by the evils which flesh is heir to, what self-devotion, what patience, what fortitude, what piety, what religious resignation." The medical profession brings its prac-

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titioners to view scenes of the most bitter wretchedness. The union of pain and sickness, the excruciating torment of acute and loathsome disease, with cold, nakedness, and poverty, forms a picture almost too afflicting to behold. Well, indeed, may it be said, that a lesson more efficacious than all the lectures of the divine or the moral philosopher, may be derived from a visit to Shoreditch or St. Giles.

To display the true character of the Medical Profession and to record the contributions of several of its members to their own special and to general science has been my aim in this my last production, which with this Autobiography I bring to a close, embracing the opportunity it affords me to acknowledge the valuable services of a young and most promising Artist, Mr. Henry Room, whose Portraits of Sir Henry Halford, Bt.; Sir Benj. Brodie, Bt.; Sir Jas. McGrigor, Bt.; Dr. James Blundell; Dr. Baron; Dr. Clutterbuck; Dr. Copland; Mr. Annesley; Mr. Copeland; Mr. Guthrie, and that of the Author, all expressly painted for the Work, have been executed with great fidelity and spirit. Nor am I less indebted to those Engravers who have so attentively regarded my suggestions for the faithful portraiture of those whose Memoirs adorn my work. The Portraits both ancient and modern, as far as it is possible, may be regarded as authentic, and cannot therefore be looked upon without considerable interest. My labours in Medical Biography will not cease with this work, as I have undertaken to furnish the principal part of the medical lives in the Biographical Dictionary, now in course of publication, under the judicious editorship of the Rev. H. J. Rose. The accounts herein contained are necessarily confined to the dead, and do not extend to any general views of the progress of science, carried up to the present time, which it has been my object to accomplish in the MEDICAL PORTRAIT GALLERY.

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RICHARD POWELL, M.D.

&c., &c., &c.

"Λεγε πραττικως και πραττε λογικος."

HIPPOCRATES.

RICHARD POWELL was a native of Oxfordshire, and born at Thame, in the year 1766. He received his education at Winchester College, where he was upon the foundation, and was afterwards entered of Merton College, Oxford. He was originally intended for the Church, but he selected the profession of medicine. He passed the Session of 1791-2 at Edinburgh, attended the Lectures and Practice of Drs. Duncan, Gregory, &c., reported the Clinical Cases in the Royal Infirmary, of which reports I have seen 3 vols. in MS. They are given at tolerable length, arranged under different heads, and have many good notes attached to them. The dissection of fatal cases is given, and the diet tables are added. He took the degree of M.A. Oct. 31, 1791, M.B. July 12, 1792, and M.D. Jan. 20, 1795, at Oxford. He then came to London to practise; was admitted a Fellow of the Royal College of Physicians in 1796; and in 1799, appointed to deliver the Gulstonian Lectures. These were published in 1800, as *Observations on the Bile and its Diseases, and on the Economy of the Liver.* In this work he takes a review of the anatomy and physiology of the liver, and the chemical properties of the bile. These subjects have been so much more fully considered since the publication of Dr. Powell's work, that it is not necessary here to enter upon any account of his views as to this organ, or the diseases to which it is subject.

In 1805, he was elected one of the Physicians of St. Bartholomew's Hospital; and at this school he delivered Lectures on the Theory and Practice of Medicine, conjointly with Dr. Roberts; and he also gave regular

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Courses on Chemistry and the Materia Medica. He was a popular teacher, having, in addition to a very competent knowledge of his subjects, an exceedingly distinct utterance and great earnestness of delivery. At the College of Physicians he was much esteemed, and filled various offices. In 1798-9, he served the office of 4th Censor; in 1807-8, that of 2nd Censor; in 1820-1, he was senior Censor; and in 1823, an Elect. In this year also he again became senior Censor; but before the termination of the year of his censorship his ill health compelled him to relinquish the office. In 1802-3, he was appointed a Commissioner for Licensing and Inspecting Mad-houses; and in 1808, he was appointed Secretary to the Commissioners. In 1815, he gave important evidence upon the subject of Insanity before a Committee of the House of Commons. In 1805, he proposed a revisal of the Pharmacopœia, and took an active share in the labours of the revision. In 1807, he was appointed a member of a standing Committee of the College, consisting of Hospital Physicians, whose office it was to examine and report concerning the powers and efficacy of new or doubtful articles of the Materia Medica; and in 1808, he was made a member of a Committee to investigate the state of Canine Madness, and means of preventing its occurrence. In 1808, also, he was elected by the College to deliver the Harveian Oration, which he printed in the ensuing year. In this Oration he did not confine himself to eulogy on the illustrious physicians of former days; but ventured to notice, in a very spirited manner, the deficiences of his Alma Mater as a school of Medicine:

"Nos quidem Oxonienses, nihil ad medicinam excolendam sacris illis sedibus deesse, immo larga manu quodcunque facile desiderares, suppeditari scimus; sed nihil studii, nihil operæ, nihil facultatum, in his muneribus conferri, invitus, coactus fateor. Stipendia et insignia manent, sed in quibusdam vix et ne vix quidem habentur ex more præscriptæ prælectiones, vix identidem inter officia professoris æstimatur ibidem commoratio. Academias nostras summa veneratione colendas, et judico, et mihi propono; longe igitur absit, ut si quid ipse eas admoneam, id pro opprobrio dictum usurpetur; sed dolore afficior quoties studiosam medicinæ juventutem, se apud exteros nobilissima hac arte instituentem, quoties, aliis in locis, magistros in docendo habiles et strenuos, auditoribus, honoribus, stipendiis, laborum præmiis insignitos, nostros in inertia conquiescentes aspicio, quin, se respiciant et tam utile exemplum apud suos imitatione haud prorsus indignum judicent, quin, né obtrectatoribus nostris plures et justiores tanquam ansas ad reprehendendum suppeditent, medicinam ultra languescere prohibeant, ne quo in loco nova virtute novis viribus cæteræ artes vigescunt, hæc una debilis et prostata videatur: ipsi potius, in statione jam satis diu dormitantes, ut expergiscantur, per officia, per fidem, per temporis necessitatem, per academiæ honorem, palam omnibus obsecro obtestorque."

Dr. Powell was a vigilant Censor of the College, and jealous of any en-

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croachment on its privileges, which appears rather inconsistent with some of the opinions expressed in the foregoing passage. His zeal for the College made him obnoxious to many; and much unmerited abuse was cast upon him, particularly by some writers, in an obscure work called "The Medical Observer." To the scurrilous attacks contained in this publication he deigned not to give any answer. He relied upon his own integrity, and was willing to leave to time to decide upon the justness of his opinions and pretensions. He did much towards the revision of the London Pharmacopœia, printed in 1809; and published an authorized translation of it, which went through three editions. The translation is faithful, and the notes attached are valuable. There is a short historical account of Pharmacopœias, and a particular detail of the mode adopted by the College to perfect this edition, the *desiderata* to be supplied, &c.

The earliest Dispensatories were scarcely more than Cookery Books: a collection of receipts carefully preserved in the bureau of the housekeeper, or in the closet of the Lady Bountiful of the village. A store closet in ancient days was indeed called a *Dispense*. Receipts for conserves and confectionaries in abundance are to be found in the earliest pharmacopœias, made up from the collections of the Arabian and Greek physicians and their successors. A dispensatory it is said appeared at Nuremberg in 1542, and proceeded from the senate, and therefore by authority. A long time preceding this there was scarcely a city or town in which a sort of pharmacopœia was not to be found, but filled with the most crude conceits and prescriptions. The Royal College of Physicians of London did not print a Pharmacopœia until 1618: this is dedicated to King James, whose proclamation is attached to it, and an Introductory Epistle, explanatory of the importance of having a fixed collection as a standard, whence all prescriptions were to be compounded. There are many ridiculous things retained in it from the receipts of ancient writers, which might have been omitted. Chicken Broth (Aqua Caponis) forms one of the articles in this work; and if the mode of its preparation was to be such as is described, it would indeed require the assistance of the apothecary. The *Mithridatum Damocratis* is given, and consists of forty-nine articles; and the *Antidotus Magna Matthioli adversus Venena et Pestem* has one hundred and thirty articles, many of them being compounds of electuaries, lozenges, &c. The authorised dispensatory of 1542 I have never seen: the library of the British Museum contains one printed at Leyden, in 1543, which is arranged alphabetically, with a table of weights and measures prefixed; and the Medical Society of London possesses a copy, published at Antwerp, in 1568. This is deserving of notice. The author is Valerius Cordus, who was the son of

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Euricus Cordus, of whom there is a curious wood-cut, with a singular epigram. This physician is reported to have received his fees only at the termination of the patient's disease; and he has described the practitioner at three different times, in three different characters:

"Tres medicus facies habet; unam, quando rogatur,
Angelicam: mox est, cum juvat, ipse Deus.
Post ubi curato, poscit sua præmia, morbo,
Horridus apparet, terribilisque Sathan."

"Three faces wears the doctor; when first sought
An angel's—and a god's the cure half wrought:
But, when that cure complete, he seeks his fee,
The devil looks then less terrible than he.

The amiable and facetious Wadd has given a good illustration of this epigram, in referring to a conversation which passed between M. Bouvart and a French Marquis whom he had attended during a long and severe indisposition. As he entered the chamber, on a certain occasion, he was thus addressed by his patient: "Good day, M. Bouvart, I feel quite in spirits; I think my fever has left me." "I am sure of it," replied the doctor, "the very first expression you used convinces me of it." "Pray explain yourself," says the Marquis. "Nothing more easy," replies Bouvart. "In the first days of your illness, when your life was in danger, I was your *dearest friend;* as you began to get better, I was your *good Bouvart;* and now I am *M. Bouvart:* depend upon it you are quite recovered." Where is the practitioner who is not able to furnish a parallel instance to this of M. Bouvart and the Marquis? But to return to Valerius Cordus: He made a journey to Hamburgh, was there introduced to the physicians, and obtained from them their best receipts in medicine. These he arranged with great discrimination: the physicians of Hamburgh were so pleased with his compact set of formulæ, that they requested of him to permit the apothecaries of the place to benefit by his labours. His collection was accordingly offered to the senate; by this body it was referred to the physicians for examination; and upon their report it was sanctioned, and every apothecary directed to prepare his medicines by the receipts it contained. The "Dispensatorium" of Cordus is, therefore, perhaps entitled to be considered as among the earliest institution of our regular Pharmacopœias. There is no accurate account of the order in which the London Pharmacopœia appeared: the first published was in 1618, and the fifth edition is stated to be that of 1639. I have seen the editions of 1618, 1627, 1632, and 1639.

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RICHARD POWELL, M.D.

Dr. Powell delivered the Croonian Lecture* in 1808, *De Motu Musculari;* in 1809, *De Tetano;* and in 1810, *De Epilepsia.* He also gave the Lumleian Lectures in 1812, *De Hydropis Curatione et Indole;* and the same subject was continued in 1813. He also delivered the Lumleian Lectures for the years 1815, 16, 17, 18, and 19. The subject he selected for these was the Pathology of the Brain and Nerves. The Lumleian Lectures, at their first institution in 1558, by the Lord Lumley and Dr. Richard Caldwall, appear, from the records of the College, to have been delivered in the Latin and then repeated in the English language; a practice which at that period was probably thought to contribute to the more general diffusion of knowledge. They appear also to have been designed for the assistance of such younger persons as might be preparing themselves for the practice of medicine, and to have been attached to the College of Physicians. The English repetitions were afterwards discontinued, and the Latin, as the vernacular language of medicine, was alone used through a long series of years. During the latter part of this period, however, professional communication in that language has been gradually but still rapidly abandoned, and a mine of natural philosophy so extensive has been opened by the energies of modern industry, that, in describing its products, the classical fetters of a dead language, if they be not insuperable impediments, are, at any rate, inconvenient restraints; nor can the removal of the custom be deplored, even by those who believe that the learning and languages of ancient Rome and Greece form the surest foundation for the superstructure of modern improvements to rest upon. The expression of facts and ideas which did not exist till long after the Latin language had ceased to be a medium of communication, and for which it must be wholly unprovided with suitable terms, has produced in many instances a modern jargon wholly unlike the great original, and ministering to the destruction rather than the exaltation of taste; of which too it may be justly said

"Nec in Roma linguit vestigia Romæ."

* The Lectures known under this title, at the Royal College of Physicians and at the Royal Society, have emanated from a legacy bequeathed by Lady Sadleir, the daughter of Alderman Lorymer of the City of London, and relict of Dr. Croone, first registrar of the Royal Society. They ought rather to be entitled Sadleirian than Croonian, since the doctor was not instrumental to their foundation. They have, in the Royal Society, been confined to the subject of muscular motion, upon which many ingenious discourses have been delivered by some most eminent physicians and surgeons: Dr. Stewart, Dr. Nicholls, Dr. Douglas, Dr. Parsons, Dr. Langrish, Dr. Morton, Dr. F. Simmons, Dr. Gray, Dr. G. Fordyce, Dr. Baillie, Dr. T. Young, Dr. Woolaston, Sir Gilbert Blane, Bart., Sir E. Home, Bart., Sir B. C. Brodie, Bart., Sir W. Blizard, Sir A. Carlisle, Mr. John Hunter, Mr. John Pearson, Mr. Abernethy, Mr. Bauer, &c.

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The Lumleian lectures were also, at their first institution, appropriated to the consideration of a fixed series of elementary subjects, for a certain number of years then next ensuing; and seem to have been especially directed to those aids which surgery supplies for the treatment of diseases. But these subjects may be inferred to have been soon exhausted, and the selection to have been left to the discretion of the lecturer: for in the year 1615, when the office was held by our immortal Harvey, he made his lectures, under this appointment, the channel through which he first delivered his physiological opinions respecting the circulation of the blood; and it is worthy of remark, that he explained and demonstrated them by experiments.

Dr. Powell's selection of his subject was judicious, and he was well qualified to treat of such an important part of the animal economy. His experience as a hospital physician had been long and extensive, and he knew as well also how to estimate the value of theory as to establish the importance of practical observation. Theory he looked upon as absolutely necessary for the recollection and application of any considerable number of detached facts, whether they respect the functions of the human body in health and in disease, or are extended to any other subject of inquiry, and that it is by arrangement alone that the confusion of irregular accumulation can be avoided: but this principle, he conceived, ought to be strictly and closely limited in its extent, as when left at large it has repeatedly failed, and been shown to be insufficient for the management of disease. All the general systems of medicine he thought had erred in this respect, and had begun where, in the natural order of things, they ought to have finished. An anxiety has been manifested for the knowledge of primary causes and general doctrines from which reasonings might proceed, without first looking to that previous collection of facts, upon which alone such causes can be safely founded; and the nature and essence of disease have thus been investigated rather than its symptoms. Of the still greater necessity of experience, of the importance of an attentive and even minute observation of the phenomena of diseases he, in common with other practitioners, felt fully convinced: he looked upon it as the touchstone by which alone we can appreciate the value of the opinions of others, and turn to any good purpose the information we obtain by reading. But the true experience must here be extended beyond mere individual practice, and embrace under it the records which have been collected through ages; it must include books, and a knowledge of what has been done by others. For when we consider, with Hippocrates, the unbounded extent of science, and the shortness of human life, and the limited sphere of human observation—when we

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further look to the variations of disease, and the infinite modifications which it receives from age, from temperament, from climate, and from a thousand accidental circumstances which arise—to what does the unaided experience of any individual amount? it is scarcely as a drop of water in the ocean: and who is there who dares refuse and reject, as useless, the experience of his predecessors in the same labour? who is there amongst us who is bold enough to feel that his own acquirements and opinions alone, can enable him conscientiously to exercise his profession for the public good?

With convictions such as these upon his mind, Dr. Powell entered upon an inquiry into the *Diseases of the Organs of Sense and Motion, and more especially those of the Brain.* His metaphysical opinions in relation to this subject may be gathered from the following passage:

"The spirit which animates the human frame, acts through the medium of matter in all its relations to external objects; nor is this fact less manifest in the operations of the mind, than in the motions of the body; and as we cannot grasp without hands, or walk without feet, or see without eyes, and as derangement in the organic structure of the limbs prevents their effects, so also is there no perception, no intellectual operation, without the organic mass called brain. It is a necessary organ, by means of which our spirit thinks, and wills, and performs every operation of mind; all those, indeed, which are peculiar to man, as well as those which he possesses in common with animals. So also is a sound, vigorous, and healthy state of brain necessary to the due performance of the functions of the mind: these are defective when the organization is so: if this be changed in any way from its natural state, if it be pressed upon from without, or deranged by disease within, all the powers of sense, of voluntary motion, and of intellect, are proportionably injured. The faculties of the mind sink under diseases of the body; it is not the immaterial part of man which is sick, but the organ through which its manifestations are made. These opinions savour in no way of what has been called materialism (if I at all understand the doctrine which we are taught to reprobate under that name), and which believes, or rather affirms, that there is nothing but matter in the universe, and that the principle of perception and thought is not distinct from the body, but a result only of the organization of matter; for this I think to be the basis of materialism, however it may be modified."

In allusion to the doctrines of Gall and Spurzheim, he observes:

"When we further contemplate the various powers of the mind, and the organ through which they become efficient, that discussion presents itself which has in recent times been so largely investigated. How far, however, the brain ought to be considered as an organ composed of a number of distinct parts, each destined to the manifestation of a particular faculty—and what reasons there may be for admitting that every faculty owes its existence, and is proportionate, to the development of its appropriate part of the brain—and what are the practical consequences to be derived from such an opinion—must be left to the able elucidation of others. Still, when I view man in his connexion with other animals, or

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compare him with himself, when I consider the expansion and growth of the infant mind, the diversity of powers which belong to different individuals, and their various degrees of acquirement under circumstances closely similar, and above all, the permanent derangements of intellect, especially partial ones, which exist under disease, I cannot but confess my own conviction of the soundness of the principle."

Dr. Powell adopted an unusual means of illustration at the College Lectures. By obtaining the assistance of Dr. Spurzheim, he exhibited a demonstration of the brain according to the method adopted by Gall and that gentleman; after which Dr. Powell proceeded to consider the diseases of the organ. He looked upon nosology as the logic of medicine; and he thought it by no means so successfully applied to the definition of diseases, as in natural history to a description of the material qualities of things which are the subjects of our senses; consequently, however great the ingenuity that has been displayed in the construction of systems, they seem to have been wholly unattended to by practical physicians. This cannot surprise; for what is to be gained by a selection of signs of any certain conditions of the body, when that condition or cause of the signs is purposely overlooked? The nosologist omits all which *sensibus in vivo homine non potest distingui.* Where anatomy is sufficient to explain a disease, no other pathological foundation can safely be taken.

On the subject of effusion of blood within the cavity of the skull, generally, Dr. Powell considered the sources from which it may arise—the local situations in which it is found—the symptoms which are produced, as they are recorded in cases—and the points of practice which demand attention in the treatment. He dwelt particularly upon the circulation of the blood through the brain—a consideration of the utmost importance in an investigation of the morbid effusions of blood which take place from its several divisions. He followed out this course by pointing out the several situations in which blood had been found within the skull; gave cases from a great number of authors, with an account of the symptoms recorded by them as accompanying such appearances; and illustrating those by what had occurred in his own practice. He afterwards attempted to generalize them. The mass of cases (sixty-four in number) is great, but the details are imperfect, and they afford fewer conclusions than Dr. Powell had expected, as to the influence of such a state upon the particular functions of mind or body. This attempt of Dr. Powell is entitled to much praise. Cause and effect are treated too much *en masse* in books; and he therefore thought it not unimportant to endeavour to connect them more closely with each other, and to investigate the detail of symptoms produced by the operation of a given cause in a given place. The anatomical facts on record are nume-

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rous, yet the symptomatology attached to them is imperfect; and in attempting to reduce such symptoms to a sort of tabular arrangement, this imperfection is more evident. No division of pathology is more open for cultivation than that of the brain. The conclusion at which Dr. Powell arrived from a review of his cases was, "that by far the greater number of cases of effusion of blood take place within the medullary substance, but not exclusively so, for it happens in the cortical, and among the membranes." Morgagni, from his experience, fixes the matter still more closely, that the greatest proportion was in the corpora striata and thalami, both from the particular structure of these parts and their neighbourhood to the ventricles, in which situation the vessels have less support.

Dr. Powell treated at large of the symptoms characterizing the several morbid affections he had described; and it is very much to be regretted that short notes only of these remain. They appear to have been selected with great precision, and constitute the products of a research, of which it may be truly said, that it hath more of labour in it than of show: *Plus habet operis quam ostentationis.* Dr. Powell also attended to the powers of the mind under these affections.

The connexion of mind and its organ is much more forcibly seen in its operations under disease than in a healthy state. The union of an immaterial and immortal part to a material and perishable one, is amongst the inscrutable laws of an Omnipotent First Cause: but it is only by its agency through bodily organs that we become acquainted with the operations of mind; and we know that these operations become irregular, when the organ through which their manifestations are made is diseased, and by no means suppose the immaterial mind itself to be the subject of disease like the corporeal part. Yet the diseased change of structure, on which these irregularities depend, is not always discoverable anatomically. Dr. Powell held it to be a pathological fact, that mind acts though matter, and that its manifestations are dependant upon matter; but to go so far, is by no means to make them one and the same thing, nor is it to make mind a quality of matter, or to infer its annihilation like the other qualities of matter, when such matter is decomposed. As to the peculiar manifestations of mind through matter, there is sufficient general evidence to prove that intellectual faculties are considerably proportionate to the developement of particular parts of the brain; not, however, pathologically so very minutely as to enable us to fix upon the immediate residence of its subdivisions.

Dr. Powell paid much attention to the subject of Insanity, and witnessed the dissection of the brain in many fatal cases. It was an objeet with him also to examine from recorded cases how far symptoms, mental and corporeal,

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were modified by the immediate local situation of diseased structure of the brain; and, after all, he regards pathological records as too defective to justify us, from them, to infer the agency of any distinct faculties through any particular parts. The symptoms appeared to him not to go farther than to show that local affection, in either hemisphere of the brain, chiefly influences the opposite half of the body—that mental affections have been chiefly noted in the mass, and as varying in degree of power, rather than as influencing particular faculties—that the degree and extent, both of one and the other, are regulated by the quantity of blood effused, and by the rapidity of its effusion; still, however, he had known attacks, apparently slight, produce more subsequent disturbance, both of mind and body, than more severe ones—and, lastly, that mind seems, under disease, as the evidence at present stands, to have a sort of totality belonging to its affections, in whatever part of the Brain actual mischief has existed.

In the Transactions of the Royal College of Physicians, there are six papers by Dr. Powell:

1. (Vol. IV. p. 85.) *Observations on the internal use of Nitrate of Silver in certain convulsive affections.* Prior to the appearance of this paper it was not generally known that large quantities of so formidable a substance as Nitrate of Silver could be taken into the stomach without injury to the organ. Dr. Powell established this; and proposed the exhibition of the medicine, not only as a remedy for Epilepsy, in which it had been often employed, but also for some other nervous affections. Angelus Sala had, at the commencement of the 17th century, given it in wine, in the quantity of from 4 to 8 grains every third day, or even repeated on the same day, if it did not produce a purgative effect. He gave up its use from the difficulty of obtaining accuracy in its preparation. Geoffroy and Boyle employed it; and Dr. James Sims gave an account of its use in Epilepsy, in the 4th vol. of the Memoirs of the Medical Society of London. He says, that although it was not efficacious in all cases, yet its exhibition seemed to meliorate the disease. It has lately been used on the Continent and in America with great success, though its employment here is almost entirely suspended. Dr. Powell ascertained that the stomach would bear a larger dose in a solid than in a fluid form. Five grains in solution was the largest quantity his patients could take; but 15 grains in the form of a pill might be given without injury. Dr. P. thought himself warranted in considering that the nitrate of silver had a more decided effect upon morbid muscular contractions, than any of the other metallic tonics.

2. (Vol. IV. p. 131.) *Observations upon the Comparative Prevalence of Insanity, at different Periods.* On this important subject Dr. Powell

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was, from his appointment at the Board of Commissioners for regulating mad-houses, well qualified to give information. The results obtained by the enquiry for this paper and subsequent statements, may be found in the reports printed, by order of Parliament, in 1815.

3. (Vol. V. p. 96.) *Observations upon some Cases of Paralytic Affection.* In this paper Dr. Powell supposed many of the cases of sudden death, commonly reported under the heads of apoplexy, palsy, &c., to be attributable to affections of the heart. He justly considered these to have been much overlooked; an opinion, the justice of which the recent employment of the stethescope has served fully to confirm. Dr. P. has detailed some cases of disorder of the facial nerves, the pathology of which has since been fully explained by Sir Chas. Bell.

4. (Vol. V. p. 198.) *Some Cases illustrative of the Pathology of the Brain.* The preceding account given of the Lumleian Lectures will show that Dr. Powell's attention had been particularly directed to the morbid conditions of this organ. In this communication he has detailed some instances, in order to prove the importance of connecting the symptoms of disease during life, with alterations of structure; though he shows that in many cases the appearances observed will not sufficiently account for the disorder that has existed. In one case (insanity) a very remarkable and highly vascular membrane was found covering the right hemisphere of the brain, beneath the dura mater, and between it and the tunica arachnoides.

5. (Vol. V. p. 358.) *Three cases of Convulsive Affection.* In one of these, the Nitrate of Silver was given for some days, to the extent of 14 grains every fourth hour, without injury or benefit. Camphor, a medicine of great use in allaying inordinate irritability, ultimately assuaged the complaint. In another case, the internal exhibition of the oil of turpentine exerted the best effects in a most violent case of general chorea.

6. (Vol. VI. p. 106.) *On certain painful Affections of the Intestinal Canal.* Dr. Powell conceived that in many instances where biliary concretions have been conjectured to have passed the ducts from the presence of violent paroxysms of pain, the causes may have been found to be in the formation of adventitious membranes. This subject is highly deserving of further investigation.

Dr. Powell communicated to the Society of Antiquaries *An Account of Two Seals attached to a deed of the 12th century, granted by the Prior and Convent of St. Bartholomew, in Smithfield;* and it is printed in the 19th

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volume of the Archæologia. He met with this Deed when engaged upon an Inquiry into the Ancient State of St. Bartholomew's Hospital—an appendage to the neighbouring convent. The Deed contains a Life Grant of the Church of St. Sepulchre from the Prior and Convent, upon the condition of certain payments.

Dr. Powell was an active Member of the Society for the Encouragement of Arts, Manufactures, and Commerce; and for many years filled most effectively the office of Vice-President.

Dr. Powell was not less highly esteemed in private life, than by his professional brethren. He was an excellent scholar, intelligent and cheerful. I had the happiness to enjoy many opportunities of associating with him, in company with his friends Dr. Maton, Dr. Haslam, Mr. Moore, Mr. Savory, and others; and never failed to be enlightened by his discourse, and gratified by his ease and good-humour. His friends were warmly attached to him, deeply sympathised in the affliction which befel him, and to the last hour of his existence he preserved their best wishes. In May, 1824, he experienced an attack of Hemiplegia, which disqualified him for any further exercise of his profession. He recovered from this attack, as far as it regarded his intellectual faculties; and he was able to read, to partake of and to enjoy social intercourse. He retired to Cheltenham, where he lived for some years, and then returned to London, took a house in York Terrace, where he died, Aug. 18, 1834, aged 68 years. His passage to the grave was greatly soothed by the most unremitting and affectionate attentions of the partner of his days, to whose kindness I am indebted for the use of the portrait from which the engraving accompanying this memoir has been executed, and which conveys a very accurate resemblance of the features and expression of Dr. Powell.

In the Harveian Oration in 1835, Sir Henry Halford, in his usual felicitous manner dedicated to his praise the following elegant éloge:

"Nec ingratum fore censeo vobis, Socii, si in altero nomine paulum immorer et in tuos cineres, RICARDE POWELL! 'purpureos spargam flores.' In etenim de Pathologiâ quædam optimè perpensa protulisti. Et in medicinâ administrandâ optimorum Magistrorum vestigiis insistens naturam ducem semper secutus es, et quosdam nervorum morbos proprio Marte debelâsti. Hæc Acta nostra litteraria intuenti facile patent. Hæc Nosocomii Scti. Bartholomæi memorabilia testantur et confirmant. Tuus est honos igitur in ærarium nostrum, quicquid potuisti, conjecisse; tua laus aliquantulùm de miseriis et doloribus humanæ conditionis detraxisse. Nec levis est illa quidem, nam quorum ingeniis hæc referuntur accepta, ab iis, et Collegii nostri, et patriæ fama adaucta est."

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P. M. Roget.

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PETER MARK ROGET, M.D., F.R.S.,

&c., &c., &c.

"The taking a taste of every sort of knowledge is necessary to form the mind, and is the only way to give the understanding its due improvement to the full extent of its capacity."

LOCKE.

PETER MARK ROGET was born in London, on the 18th of January, 1779.* His father, the Reverend John Roget, was the descendant of a Swiss family, for many generations established at Geneva, where he was himself born and educated. He possessed considerable literary attainments, a highly cultivated taste, a disposition the most amiable and benevolent, and a sense of honor the most exalted and refined. When about the age of five-and-twenty, he received the appointment of Minister to one of the Swiss

* The following brief narrative of the circumstances which attended the emigration of his maternal ancestors into this country, is contained in a published speech of the late Sir Samuel Romilly to the Electors of Bristol, in which he took occasion to allude to some reports which had been raised to his prejudice for electioneering purposes. "It has been published in this city, that I am a foreigner, and that if you elect me you will send a foreigner to represent you in a British Parliament. Gentlemen, I was born and educated, and have passed my whole life in England, with the exception of a short interval, which was spent in visiting foreign countries. My father, too, was born and educated in England, and spent his whole life in it. My grandfather, it is true, was not an Englishman by birth, but he was an Englishman by choice. He was born heir to a considerable landed estate at Montpellier, in the south of France. His ancestors had early imbibed and adopted the principles and doctrines of the reformed religion, and he had been educated himself in that religious faith. He had the misfortune to live soon after the time when the edict of Nantes, the great toleration-act of the Protestants of France, was revoked by Louis XIV., and he found himself exposed to all the vexations and persecutions of a bigoted and tyrannical government, for worshipping God in the manner which he believed was most acceptable to him. He determined to free himself from this bondage; he abandoned his property; he tore himself from his connexions, and sought an asylum in this land of liberty, where he had to support himself only by his own exertions. He himself embarked in trade: he educated

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Churches in London. Among the constant attendants on that church, was the family of Mr. Peter Romilly, the father of the late Sir Samuel; their admiration of the talents of their pastor, and esteem for his character, soon led to an intimate acquaintance; and young Romilly, in particular, finding in his companion, although six years his senior, tastes and dispositions congenial with his own, became warmly attached to him. A closer alliance, resulting from Mr. Roget's marriage with his sister, in the year 1778, contributed still further to strengthen and mature their mutual friendship.

The domestic happiness of Mr. Roget, which had been thus secured by his union with the amiable and accomplished object of his affection, and cemented by endearing ties of friendship with her brothers, was, the following year, increased by the birth of a son, the subject of the present memoir. But this prospect of felicity was destined to be soon over-clouded by indications of pulmonary disease, of a nature too serious to be neglected, and which compelled him to quit the field of his exertions, and the country of his adoption; and to seek the salutary influence of a milder climate in the South of France. He derived, for a time, much benefit from the change; and, while waiting for the restoration of health, and the ability to resume his professional duties, he occupied his leisure hours in collecting materials for a History of the American War. But these expectations were delusive; and when he had nearly brought his work to a completion, his disorder returned, and ultimately proved fatal. He died at Lausanne, in 1783, a few days after the birth of a daughter. His widow, with her two children, returned, soon after this event, to England, accompanied by her brother, who had kindly come over to afford her consolation. She devoted herself wholly to her children's education and welfare, which the rare endowments of her mind admirably qualified her to conduct and promote. Her chief residence was at Kensington, where her son went through the usual course of school education, under the tuition of Mr. Chauvet, who kept an Academy in that place, and who directed his studies and pursuits, not merely with a care and attention beyond that of an ordinary instructor, but even with the zeal and affection of a parent. Mr. Chauvet's house was long the resort of numerous persons remarkable for their talents and literary attainments; and from their society, young Roget could not fail to

his sons in useful trades; and he was contented at his death to leave them, instead of his original patrimony, no other inheritance than the habits of industry he had given them; the example of his own virtuous life; an hereditary detestation of tyranny and injustice; and an ardent zeal in the cause of civil and religious freedom. To him I owe it, among other inestimable blessings, that I am an Englishman. Gentlemen, this is my origin; and I trust that I need not blush to own it."

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derive much improvement. But to no one, among the friends of his youth, was he more deeply indebted for the expansion of his mind, than to the late Mr. Dumont, who was no less distinguished by his remarkable powers of conversation, than eminent as a philosophical writer, and who united to the most extraordinary acuteness of intellect, refinement of taste, and extensive range of knowledge, the most benevolent affections of the heart. He had been the particular friend of his father, and afterwards became still more closely attached to his uncle, Sir Samuel Romilly; and feeling a warm interest in the progress of his young friend, bestowed, with unvarying kindness, much pains in directing him in the cultivation of his taste, and his pursuit of knowledge.

Dr. Roget showed, when very young, a decided partiality for mathematical studies; and without any instruction from others, or even encouragement to persevere, had made considerable proficiency in all the elementary branches of these sciences, by his own unaided exertions.

Having chosen Medicine as his profession, he went to Edinburgh, at a time when its University was still in the meridian of its fame. Cullen, indeed, was no more: but the reputation of the school was sustained by the illustrious names of Black, Monro, and Gregory, in Medicine; and of Stewart, Robison, and Playfair, in Philosophy. Here, he improved his classical learning under Professors Hill and Dalzell; and his knowledge of the Physical Sciences under the able instruction of Professor Robison. He received the most kind attentions both from Professor Dugald Stewart, and Mr. Henry Mackenzie, whose works are so well known, and profited much from their society. After completing the usual course of academical studies at the University, he took the degree of Doctor of Medicine in June, 1798, before he was twenty years of age: the subject of his thesis being, *De Chemicæ Affinitatis Legibus.*

The labours of the winter, and the debility consequent on a severe typhous fever, which he caught in the clinical wards of the Infirmary, and which had nearly proved fatal, now required some relaxation, and Dr. Roget took this opportunity of making the tour of the lakes in the North of England, and spent the remainder of the summer in visits to the celebrated Chemist, Mr. Keir, near Birmingham, to Dr. Beddoes, at Clifton, and to the Marquis of Lansdowne, at Bowood. He then returned to London, where he remained the two following winters; and, with a view to enlarge his professional knowledge, attended the medical schools, and became a pupil of Dr. Willan, at the Public Dispensary—attended the courses of instruction given in Windmill Street, by Dr. Baillie, Mr. Cruikshank, and Mr. Wilson—and, as a pupil of St. George's Hospital, followed the practice

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of Dr. Baillie, Dr. Wm. Heberden, and Sir Everard Home, in the wards of that Institution. He also attended a course of Mr. Abernethy's lectures in St. Bartholomew's Hospital.

When the Continent became open to English travellers, by the conclusion of the peace of Amiens, Dr. Roget, in company with two of the sons of Mr. John Philips, of Manchester, spent nearly two years at Paris and Geneva; residing, at the latter place, in the house of his friend and former preceptor Mr. Chauvet, who had then retired to his native city. He was still in Geneva, when, on the abrupt resumption of hostilities between France and England, Bonaparte suddenly resorted to the unjustifiable measure of seizing on all Englishmen indiscriminately who happened to be within the French territory. Dr. Roget was among the number of the *detenus;* but, after being retained as a prisoner for two months, he was fortunate enough to obtain his liberty by means of a passport, which was granted to him in virtue of the privileges belonging to him as the son of a citizen of Geneva, and entitling him to exemption from the French authorities. After a devious route through Switzerland, Germany, and Denmark, which the rapid incursions of the French armies had rendered necessary, he at length landed safely, with his young friends, in England.

In the spring of 1804, he again visited Edinburgh, for the further cultivation of his professional knowledge; and remained there some months, until he was summoned to attend the old Marquis of Lansdowne, (father of the present Marquis,) who, being in a declining state of health, had been advised to repair to Harrogate, and wished to have a physician constantly with him, during his residence in that place. Dr. Roget, accordingly, accompanied him in his journey thither, and was an inmate in his house during the time that he continued to reside there. In the autumn of the same year he returned with his lordship to Bath.

On the death of Dr. Percival, of Manchester, there appeared to be a favourable opening for a physician in that town; and Dr. Roget was induced, at the solicitation of several friends there, to establish himself in that populous and thriving seat of manufactures and commerce. He was fortunate enough to obtain the vacant appointment of Physician to the Manchester Infirmary; an Institution which combines the advantages of a large Hospital, an extensive Dispensary, a House for the treatment of patients affected with Fever, and also a Lunatic Asylum. At the period now alluded to, there can hardly be said to have existed in England, any organized provincial School of Medicine. The extensive establishments at Manchester, affording so ample a field of observation and experience, were peculiarly adapted to the purposes of medical instruction; and Dr. Roget, in conjunc-

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tion with his colleagues in the infirmary, Mr. Gibson and Mr. Hutchinson, may be regarded as having lain the first foundations of the medical school in that town, by giving to the pupils of the Hospital the first regular course of lectures and demonstrations on Anatomy and Physiology. This latter branch of the subject was undertaken by Dr. Roget; and he extended it by embracing *Comparative Anatomy and Physiology*, sciences which were then beginning to attract very general attention. These lectures were remarkably successful; and Dr. Roget was induced, by the encouragement which had attended his first attempts, to deliver, in the following year, a more general and popular course on the *Physiology of the Animal Kingdom*, which was honoured by a numerous and respectable audience, and gave general satisfaction. During the four years that he resided in Manchester, he took an active part in the proceedings of the Philosophical and Literary Society of that place; and was elected one of its Vice-Presidents. It was a period when this Society, one of the earliest established in England for scientific objects out of the metropolis, had attained a high name, supported as it was by such men as Dalton, Ferriar, Henry, Holme, White, Walker, Gibson, Ewart, Duckworth, Philips, and Heywood.

In 1808, at the earnest wish of his relations and friends, Dr. Roget quitted Manchester, and established himself in London, as affording a wider field for the exercise of his talents. He was admitted a Licentiate of the College of Physicians; and fixing himself in the neighbourhood of Russell Square, made his début as a lecturer in London, by giving, in the spring of 1809, a popular course of *Animal Physiology* at the Russell Institution, which had been recently established in that neighbourhood—a course which he repeated, with suitable variations, the following year.

In 1810, he was elected physician to the Northern Dispensary; an institution, in the formation of which, with the co-operation of many influential persons residing in the neighbourhood of Russell Square, he had actively exerted himself; and which has long prospered, under the presidency of the Marquis of Lansdowne, and the patronage of His Royal Highness the Duke of Sussex.

In the autumn of the same year, he was invited by the late Dr. Cooke, who had for some years past been engaged in giving Lectures on the Practice of Physic, in the Anatomical and Medical School, originally founded by Dr. William Hunter, in Windmill Street, to undertake one half of each course: and Dr. Roget, accordingly, continued to give these lectures, conjointly with Dr. Cooke, for three years; when, on the retirement of the latter, the whole charge devolved on himself,—and he was the sole lecturer in that department during several years subsequently.

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In 1811, Dr. Roget was chosen one of the Secretaries of the Medical and Chirurgical Society of London; of which society he had been one of the earliest members and zealous promoters, in conjunction with his friends Dr. Marcet and Dr. Yelloly. He continued to perform, during twelve years, the duties of that office, which included the laborious task of editing the Medico-Chirurgical Transactions: twelve of the early volumes of this work were by him prepared for the press. In the years 1829 and 1830, he was elected President of the Society. To the Transactions he furnished two Papers:

1. (Vol. II., p. 137.) *A case of Recovery from the effects of Arsenic; with remarks on a new mode of detecting the presence of this Metal.* The fatal effects which result from taking the white oxyd of arsenic are rarely averted. The mode of treatment pursued by Dr. Roget in this case was, that which is suited to an attack of idiopathic gastritis, the stomach and intestines having been previously evacuated in an abundant manner. Bleeding, *ad deliquium*, blistering, &c., were freely employed, and by these means the usual stage of gangrene most probably prevented. Epilepsy occurred, as one of the secondary effects of the poison.

2. (Vol. VII., p. 290.) *On a Change in the Colour of the Skin, produced by the internal use of the Nitrate of Silver.* Many cases of this description have occurred, and the discolouration is permanent. No means hitherto adopted have been able to make any impression upon the bronze hue, which this medicine has so frequently produced. The seat of it appears to be in the rete mucosum. Fourcroy was, I believe, the first to notice this discoloration, and it has since been the subject of ingenious observations by various writers, Biett, Albers, Reimar, Chaufepié, Schleiden, Butini, Delarive, Odier, Powell, Marcet, &c.

For a great many years he was engaged in lecturing on his favourite subject, *Comparative Physiology*, at the Royal Institution: and during three winters, he gave similar courses of lectures at the London Institution.

A paper which he communicated, through Dr. Wollaston, to the Royal Society, in 1814, giving the description of a new sliding-rule of his invention, capable of performing approximative numerical computations in involution and evolution, and of being applied in the higher departments of analysis, procured him the honour of being elected a Fellow of that Society in 1815, in the Philosophical Transactions of which year his Paper was published.

In 1817, Dr. Roget was appointed Consulting Physician to the Queen Charlotte's Lying-in Hospital, an office which he still holds.

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In 1818, while on a visit at the Marquis of Lansdowne's, at Bowood, he was summoned to the painful duty of attending Lady Romilly during an illness, which terminated fatally, and which, soon after, was followed by the death of his uncle, Sir Samuel, to whom he had ever borne the affection of a son.

In 1820, and for many subsequent years, he held the appointment of Physician to the Spanish Embassy, in London; and was honoured with much attention from the Duke of San Carlos, and the Duke of Frias, during their residence in this country.

In 1823, he was appointed, together with Dr. P. M. Latham, to take charge of the medical treatment of the prisoners in the General Penitentiary, at Milbank, on the occasion of a severe epidemic scurvy and dysentery, which had broken out in the prison, and was found to have affected more than half the number of its inmates. In the arduous duty of combating this disease, these gentlemen were occupied for a period of fifteen months; viz. from March, 1823, to May, 1824.*

In 1824, Dr. Roget married Miss Hobson, only daughter of the late Jonathan Hobson, Esq. an eminent merchant, in Liverpool. The happiness with which he was blessed by this union, and which for a period of eight years was without alloy, was prematurely terminated by Mrs. Roget's death, after a lingering illness; leaving him, as his only sources of consolation in this irreparable calamity, a daughter and a son, to which she had given birth.

In consideration of the services which he had rendered to the Northern Dispensary, gratuitously, for so many years, the governors of that Institution, in 1825, presented him with a valuable piece of plate, bearing the following inscription:

"Presented by His Royal Highness the Patron, the President, Vice Presidents, the "Treasurer, and other Governors of the Northern Dispensary, to Peter M. Roget, M.D., "in testimony of respect for his character, and grateful acknowledgment of his able, "humane, and gratuitous services as a Physician to the Dispensary, for upwards of "fifteen years. June, 1825."

On the establishment of the School of Medicine, in Aldersgate Street, in October, 1826, Dr. Roget undertook an extended course of lectures on

* For the history of this curious disease, and the methods of treatment employed, which proved ultimately successful in arresting its ravages, see Dr. Latham's excellent account, published in 1825.

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Physiology to the pupils of that school. He was induced, at the request of his hearers, to publish his introductory lecture to that course.

An Introductory Lecture on Human and Comparative Physiology, 8vo. Thirteen years have elapsed since the publication of this work, at which time Comparative Anatomy was beginning to exercise its due influence in Physiological Science. It now forms an essential branch of professional education, and the recent establishment of the Fullerian Professorship at the Royal Institution, and the judicious selection of Mr. Owen, as Professor at the Royal College of Surgeons, to illustrate the gigantic labours of John Hunter, will do much towards advancing our knowledge of the subject. Dr. Roget must be regarded as having contributed largely to produce this effect, in the lectures delivered by him, at the Aldersgate Medical School, and during the three years he held the Fullerian Chair of Physiology. The *Introductory Lecture* exhibits a general view of the system of organized and living beings, and demonstrates the impossibility of satisfactorily accounting for the phenomena they present, simply by the laws of Mechanism and Chemistry.

In 1827, he was appointed, conjointly with the late Mr. Telford, and Professor Brande, on a Commission to examine and report on the supply of water to the metropolis, more especially with reference to its salubrity. After being occupied for several months in the investigation of this subject, they drew up a report of their labours, in May 1828, which was presented to the House of Commons, and printed by their order.

In November, 1827, on the retirement of Mr., now Sir John Herschel, from the office of Senior Secretary of the Royal Society, Dr. Roget was elected his successor; and he still holds that office. I have already noticed the Mathematical Paper by which he obtained introduction into the Royal Society. He also contributed another to the Philosophical Transactions for 1825, which was republished in the Annals of Philosophy. It is entitled, *Explanation of an Optical Deception in the appearance of the Spokes of a Wheel, seen through vertical apertures.* In explaining this optical deception, Dr. Roget suggests the possibility of measuring the duration of the impression of light on the retina by observing the apparent velocity of the visible portion of the spokes. In addition to the duties of Secretary of the Royal Society, Dr. Roget made *Abstracts of the Papers read to the Royal Society*, since Nov. 1827, which were published by the Society. The whole work, including abstracts made prior to the above date, now forms 3 vols. 8vo.

In 1831, he was elected *speciali gratiâ*, Fellow of the Royal College of Physicians in London; and in 1832, was appointed to read the Gulstonian

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Lectures in the College. The subject which he selected for these Lectures, was "*the Laws of Sensation and Perception.*"

An abstract of these Lectures was published in the Medical Gazette for May, 1832. The subject is too complex to admit of analysis in this place it is, however, replete with interest, and involves a consideration of a variety of the most difficult and most speculative points in physiological science. Dr. Roget shows that various nerves, subservient to sensation, are adapted to receive impressions of particular kinds, and to exclude all other impressions; and he therefore denounces, as wholly unworthy of credit, the stories of persons in a trance, induced by animal magnetism, hearing sounds not addressed to their ears but to the pit of the stomach; or reading the pages of a book applied to the skin of the abdomen. "They say miracles are past; and we have our philosophical persons, to make modern and familiar things supernatural and causeless."*

Dr. Roget thinks, that instead of restricting the senses to five, it would be more philosophical to extend the number much further; and, classing them according to the nature of the sensations conveyed, to consider each difference of texture as laying the foundation for a distinct organ of sense. The influence of habit upon the sensibility of our organs, is strikingly illustrated by a reference made by Dr. Roget to the late Sir W. Herschel, the sensibility of whose eye was so much increased by constant application to his sublime pursuits, that "when a star of the third magnitude came towards the field of view of his telescope, he found it necessary to withdraw his eye, before it actually presented itself, lest he should injure the acquired delicacy of his vision. On one occasion, after a considerable sweep with his forty feet telescope, the appearance of Sirius announced itself at a great distance, like the dawn of the morning, and came on by degress, increasing in brightness, till this brilliant star at last entered the field of the telescope with all the splendour of the rising sun, and obliged him to withdraw his eye from the beautiful but too dazzling spectacle." Dr. Roget states many curious facts regarding ocular spectra; and he gives an account of the principal sources of fallacy in our perceptions, most of which he thinks capable of being traced to the operation of the very same laws which, in ordinary circumstances, direct our judgment correctly, and to the accidental interference of these laws by unusual and irregular combinations of circumstances.

In 1833, he was plunged in the deepest affliction by the death of his wife: at length, exerting all his fortitude, he applied his mind to the

* Shakspeare.

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completion of a work he had already sketched, and for which he had collected copious materials, having been appointed, by the kindness of Mr. Davies Gilbert, then president of the Royal Society, one of the writers of the works known under the name of the *Bridgewater Treatises*, and having for their subject "the power, wisdom, and goodness of God, as manifested in the Creation." The department assigned to Dr. Roget was, *Animal and Vegetable Physiology:* a work which he completed in two volumes, octavo, in May, 1834. The order observed by Dr. Roget, in the arrangement of his materials for this publication, corresponds with that in his *Introductory Lecture*. He treats of the Functions—*Mechanical, Vital, Sensorial, and Reproductive.* By this arrangement, the Animal System necessarily forms the larger portion of the work. Animal life must offer more abundant, striking, and palpable proofs of Natural Theology, than the Vegetable system can afford. In the composition of this treatise, Dr. Roget states that he has "excluded from it all those particulars of the natural history, both of animals and plants, and all descriptions of those structures of which the relation to final causes cannot be distinctly traced; and has admitted only such facts as afford manifest evidences of design." These facts he has arranged in a methodized order; and has united, in comprehensive generalizations, those which conduce not only to their more ready acquisition and retention in the memory, but also to enlarge our views of their mutual connexions, and of their subordination to the general plan of creation. By this method, Dr. Roget's treatise may be looked upon as an excellent Introduction to the study of Natural History. The work opens with two introductory chapters on Final Causes, and the Functions of Life. Of the manner in which the subject is treated, some idea may be formed from the following extract:

"Measured on the vast scale of the universe, the globe we inherit appears but as an atom; and yet, within the compass of this atom, what an inexhaustible variety of objects is contained; what an endless diversity of phenomena is presented; what wonderful changes are occurring in rapid and perpetual succession! Throughout the whole series of terrestrial beings, what studied arrangements, what preconcerted adaptations, what multiplied evidences of intention, what signal proofs of beneficent design, exist to attract our notice, to excite our curiosity, and to animate our inquiries! Splendid as are the monuments of divine power and wisdom displayed throughout the firmament, in objects fitted by their stupendous magnitude to impress the imagination, and overpower us by their awful grandeur; not less impressive, nor less replete with wonder, are the manifestations of those attributes in the minuter portions of nature, which are more on a level with our senses, and more within the reach of our comprehension. The modern improvements of optical science, which have expanded our prospects into the most distant regions of the universe, have likewise brought within our range of vision the more diminutive objects of

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creation, and have revealed to us many of the secrets of their structure and arrangement. But, farther, our reason tells us that, from the infinite divisibility of space, there still exist worlds far removed from the cognizance of human sense, however assisted by the utmost refinements of art; worlds occupied by the elementary corpuscles of matter, composing, by their various configurations, systems upon systems, and comprising endless diversities of motions, of complicated changes, and of widely-extended series of causes and effects, destined for ever to remain invisible to human eyes, and insurmountable to human science.

"Thus, in whatever field we pursue our inquiries, we are sure to arrive at boundaries within which our powers are circumscribed. Infinity meets us in every direction, whether in the ascending or descending scale of magnitude; and we feel the impotence of our utmost efforts to fathom the depths of creation, or to form any adequate conception of that supreme and dominant Intelligence, which comprehends the whole scale of being, extending from that which is infinitely small to that which is infinitely great!"

How just are the following observations, which conclude the first chapter:

"The more we extend our knowledge of the operations of creative power, as manifested in the structure and economy of organized beings, the better we become qualified to appreciate the intentions with which the several arrangements and constructions have been devised, the art with which they have been accomplished, and the grand comprehensive plan of which they form a part. By knowing the general tendencies of analogous formations, we can sometimes recognise designs that are but faintly indicated, and trace the links which connect them with more general laws. By rendering ourselves familiar with the handwriting where the characters are clearly legible, we gradually learn to decypher the more obscure passages, and are enabled to follow the continuity of the narrative through chapters that would otherwise appear mutilated and defaced. Hence the utility of comprehending, in our studies, the whole range of the organized creation, with a view to the discovery of final causes, and obtaining adequate ideas of the power, the wisdom, and the goodness of God."

To attempt any analysis of this work, would be to give a summary of an entire system of comparative physiology, and would form of itself a volume. The reader, professional and general, will never consult the pages of Dr. Roget's treatise in vain, nor rise from its perusal without having received instruction and improvement. The style in which it is written, and the feeling which pervades the whole, is calculated to mend the heart, as well as to inform the understanding; and it will, doubtless, maintain a high rank among those treatises with which it is connected. It concludes with an appropriate chapter on the Unity of Design, as deduced from the Inquiry into Animal and Vegetable Physiology: "Unity of design and identity of operation pervade the whole of nature; and they clearly point to one great and only Cause of all things arrayed in the attributes of power, wisdom, and benevolence, whose mighty works extend throughout the boundless regions of space, and whose comprehensive plans embrace eternity."

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Of this work the Edinburgh reviewers have justly said, that it will bear a comparison with any of the Bridgewater Treatises which they have perused, whether they consider them in reference to the science and learning which they display, to the acuteness and sobriety of their argument, or to the tone of piety and religious feeling in which they are composed.

In the same year (1834,) he was nominated by the late John Fuller, Esq. of Rose Hill, in Sussex, to the new Professorship of Physiology, founded by him, and bearing his name, in the Royal Institution of Great Britain: and, in pursuance of the intentions of the founder, Dr. Roget continued, for three years subsequently, to discharge the duties of that appointment, by annual courses of lectures.

In 1835, Dr. Roget was appointed one of the Censors of the Royal College of Physicians; and in November, 1836, he was appointed, by the Crown, one of the Members of the Senate of the University of London; and he, for a considerable time, held the office of Chairman of the Medical Faculty of that University. In June last, he was chosen Examiner in Comparative Anatomy and Physiology.

Besides being connected with the above-mentioned Institutions, Dr. Roget is a Fellow of the Royal, Geological, Astronomical, Geographical, Zoological, and Entomological Societies; a Vice-President of the Society of Arts; and a member of the Royal Institution of Great Britain, of the Institution of Civil Engineers, and of the Literary and Philosophical Societies of Manchester, Liverpool, Stockholm, Canada, and New York.

In addition to the works already noticed, Dr. Roget has printed various treatises and papers, in different publications:—To the *Encyclopædia Britannica*, his communications have been numerous: 1. The article of *Cranioscopy*, in the supplement to the 6th edition. 2. The article *Deaf and Dumb*. 3. *Art*. 4. *Apiary*. 5. *Bee*. 6. *Physiology*. 7. *Phrenology*, in the 7th edition. This contains a republication of the article Cranioscopy in the former supplement, together with additional observations on the subject. 8. *Physiology*, which is entirely a new and a most comprehensive article. This and the preceding article have been published separately, in 1838, in 2 vols. 12mo. Dr. Roget is a decided opponent to Phrenology as "a doctrine of mental philosophy, founded on a presumed knowledge of the functions of different portions of the brain, obtained by comparing their relative forms and magnitudes in different individuals, with the propensities and intellectual powers, which these individuals are found respectively to possess." 9. Biographical Memoir of *Paul Joseph Barthez*. 10. Of *Thomas Beddoes, M.D.* 11. *Marie François Xavier Bichât*. 12. *Richard Brocklesby, M.D.* 13. *Pierre*

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Marie Auguste Broussonet. 14. *Peter Camper.* 15. *James Currie, M.D.* 16. *Sir Joseph Banks, P.R.S.* The latter is in the 7th edition of the Encyclopædia Britannica.

To the *Eyclopædia* edited by Dr. Abraham Rees, Dr. Roget furnished several Medical articles, particularly those on *Sweating Sickness, Symptom, Syncope, Tabes, Tetanus*; and to the *Encyclopædia Metropolitana* the Treatise on *Galvanism.* To the *Annual Biography and Obituary for* 1823, he furnished a Memoir of his friend *Dr. Marcet.* To the *Philosophical Magazine* (Vol. III. pp. 118, 203, New Series,) a Paper *on an Apparent Violation of the Law of Continuity;* to the *Annals of Philosophy* (Vol. XI. p. 375) a Letter *On the Kaleidoscope*; and (Vol. I. N.S. p. 135) *Observations on Mr. Perkins's Account of the Compressibility of Water, given in the Philosophical Transactions for* 1820; to the *Royal Institution Journal* (Vol. I. p. 311,) *On the Geometric Properties of the Magnetic Curve, with an account of an instrument for its mechanical description;* to *The Library of useful knowledge,* the treatises on *Electricity, Galvanism, Magnetism, and Electro-Magnetism.* These have been since published separately, in one volume. Dr. Roget has also contributed to the *Parliamentary Review,* papers on the *Quarantine Laws,* (1826,) and on *Pauper Lunatics,* (1828;) to the *Edinburgh Review,* Reviews of *Huber's Recherches sur les mœurs des Fourmis indigènes* (Vol. XX, p. 146) and *Huber's Nouvelles Observations sur les Abeilles* (Vol. XXV. p. 363,) and to the *Quarterly Review,* a Review of *Ampères Recueil d' Observations Electro-Dynamiques, &c.,* and of *Barlow's Essay on Magnetic Attractions, &c.* To the *Cyclopædia of Practical Medicine* Dr. Roget contributed the Articles *Age* and *Asphyxia:*—

Age. Sterne has said, that "at sixty years of age the tenement gets fast out of repair; and the lodger, with anxiety, thinks of a discharge." The changes which take place in organized beings have not hitherto been viewed with sufficient discrimination. Few writers have indulged further than in general remarks on the subject; and every attempt, like to that here presented by Dr. Roget, is useful in directing attention to so important and interesting a topic of enquiry. We are told, by a high authority, that all humanity that either is, or shall be, once shall die: *Omne humanum genus quodcunque est, quodcunque erit, morti damnatum est,* a lesson of the truth of which the experience of every day fully convinces us.

> "Man's make encloses the sure seeds of death;
> Life feeds the murderer: ingrate! he thrives
> On her own meal, and then his nurse devours."
>
> YOUNG.

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The natural duration of human life is not satisfactorily ascertained, and the changes in the system, by which it may be curtailed, have been most inefficiently observed. Dr. Jameson published, in 1811, a small and an ingenious work upon this subject, under the title of *Essays on the Changes of the Human Body, at its different Ages; the Diseases to which it is predisposed, in each period of Life; and the Physiological Principles of its Longevity.* This is worthy the attention of the reader. Perpetual mutation, Dr. Roget observes, seems to constitute the fundamental law of the condition of organized beings. A series of actions and re-actions ever varying, and yet constantly tending to definite ends, characterizes the entire period of existence. The whole of the materials of the body are supposed to undergo a change, in a period of seven years. This cannot be ascertained of the soft, but it has been rendered evident in the hard, parts of the frame, by the experiments often adverted to, in which bony matter has been tinged with madder that had been mixed with the food of an animal.

To mark the progressive changes which take place in Age, Dr. Roget examines into the several classes of textures and functions composing the animal economy; and he directs particular attention to their mechanical properties. He admits that a great difference exists in the relative proportion of fluids and solids in the earlier, and in the later, periods of life; and that, as we advance in life, the proportion of fluids in each organ, and in the body generally, is considerably diminished. The chemical changes are no less remarkable: in early life, phosphate of lime is but little abundant, and fibrin is scantily developed—in age, the quantity of gelatine decreases, and even alters in its character, and the phosphate of lime sometimes accumulates in an excessive degree. The secretory functions undergo a variety of changes, and the structure of the different parts of the body is proportionably altered or affected. Dr. Roget briefly traces the perceptible changes attendant upon age, in different parts and in different functions of the frame. Nor does the decay of the intellectual functions escape his attention. He traces the diminution of vigour in the powers of the mind, beginning with that of memory, usually the first to denote impairment, which is in agreement with a remark, by Ben Jonson, that "Memory, of all the powers of the mind, is the most delicate and frail: it is the first of our faculties that age invades—" and having drawn a most faithful picture of the advances of decay in sensibility, and the senses, he stops short in his detail, unwilling to pursue the *strange eventful history* to the last melancholy chapter of man's existence, and contemplate the wreck of those exalted faculties which ennoble his nature, and of which, the deprivation lowers his condition far beneath that of the beasts of the field!

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"Need we (says he) dwell upon the sickening spectacle of second childishness and mere oblivion;" and disclose those mournful contrarieties of our nature, that drew forth the exclamation from the poet—

> "In life's last scene, what prodigies surprise!
> Tears of the brave and follies of the wise.
> From Marlborough's eyes the streams of dotage flow,
> And Swift expires a driveller and a show!"

Let us (says Dr. Roget) rather draw a veil on this humiliating picture of the frailties incident to humanity, and which forcibly remind us of what

> "We shun to know,
> That life protracted, is protracted woe."

From an attentive consideration of the subject, Dr. Roget is led to conclude, that "the spontaneous decay of the body, and decline of its powers, invariably attending the lapse of years, arise altogether from causes that are internal, and interwoven with the very conditions and laws of its existence, and are but little influenced by external circumstances. With inorganic bodies, precisely the reverse takes place; they owe to external causes their decomposition and destruction. But living bodies perish from within, being consumed by the very fire which is itself the source of their animation." The paper concludes with some observations on what has been termed the *Climacteric Disease*, and on those diseases which may be considered as the specific disorders of age, and by which life is, at an advanced period, most frequently terminated.

Asphyxia. This literally means an absence of the pulse—a cessation of the heart's action; but is now generally understood to denote the existence of a series of symptoms which arise from interrupted respiration, by which the blood is rendered unfit for the purposes of life, and the functions of sensation and voluntary motion are suspended. The experiments of Goodwyn, Coleman, Brodie, and others, have shown the manner in which these consequences are induced, and have also pointed out the means by which they may be obviated or relieved. Dr. Roget details the more general phenomena that accompany the various forms of asphyxia, and the different modes in which it may be induced. His theory of asphyxia is the non-arterialization of the blood; and Bichât has shown the first effect of the circulation thus rendered deleterious to be exerted on the brain, whence it extends to the nervous system generally. The particular kinds of asphyxia resulting from the inspiration of various deleterious gases are detailed; also from drowning. On this head, Dr. Roget says, that "if

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the submersion have not exceeded five minutes, and no blow against a stone or other violence has occurred to complicate the effect, our efforts at resuscitation, if properly conducted, will generally be successful." The exclusion of air from the lungs in hanging, is the sole cause of death in these cases, and not by the production of apoplexy, as many have conjectured.

Dr. Roget has also furnished information to aid the works of others: In Dr. Beddoes's *Essay on the Causes, &c., of Pulmonary Consumption, Lond.* 1799, there is a letter by Dr. Roget on the Non-prevalence of Pulmonary Consumption among Butchers, Fishermen, &c. In Sir Humphry Davy's *Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide, or Dephlogisticated Nitrous Air, and its Respiration, Lond.* 1800, there is a communication from Dr. Roget on the Effects of the Respiration of Nitrous Oxide. In Mr. Travers's *Synopsis of the Diseases of the Eye, and their Treatment,* a letter by Dr. Roget on the Voluntary Motions of the Iris; and to Larkins's *Introduction to Solid Geometry, and to the Study of Chrystallography, containing an Investigation of some of the Properties belonging to the Platonic Bodies, independently of the Sphere, Lond.* 1820, Dr. Roget wrote an appendix.

The application and unceasing industry requisite for the completion of these literary, medical, mathematical, and philosophical labours must be evident to the reader; and the value of the several communications entitle Dr. Roget to the respect and regard of the medical and scientific world. That they have not been disregarded is shown by the preceding narrative. The various appointments given to him by the crown, and by public bodies, attest the estimation in which his talents are held; and the works he has published, justify the selection of one so highly gifted for the performance of the several important duties that have, at various times, been intrusted to his care and execution.

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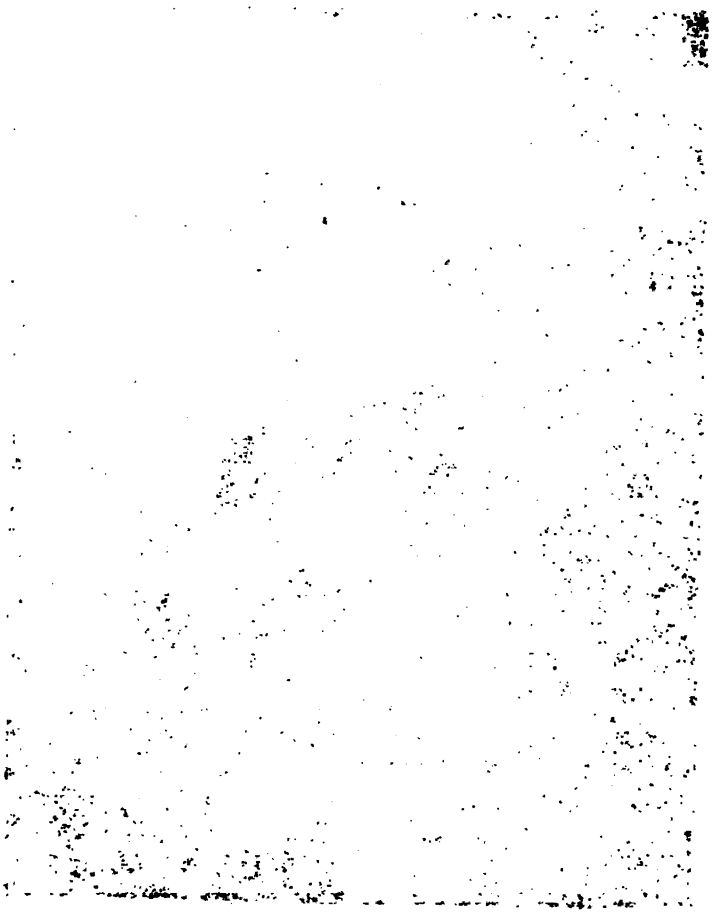

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RICHARD ANTHONY STAFFORD,

SURGEON TO THE ST. MARYLEBONE INFIRMARY,

&c., &c., &c.

Sum ex iis qui miror antiquos; non tamen ut quidam, temporum nostrorum ingenia despicio. Neque enim, quasi lassa, et effœta natura, ut nihil jam laudabile pariat.

CICERO.

RICHARD ANTHONY STAFFORD is the third son of the Rev. Egerton Stafford, Rector of Chachombe, and of Thenford, Northamptonshire, and was born in 1801, at Cropredy, a village in Oxfordshire, celebrated as the place where the famous battle of Cropredy Bridge was fought, in the time of Charles I. Mr. Stafford is descended, on the paternal side, from the ancient house of Stafford, and on the maternal, from the Wykeham's, of Oxfordshire, his mother bearing that name, and being sister to Fienne-Wykeham Martin, Esq., of Leeds Castle, near Maidstone. This family, together with the Baroness Wenman, (whose name is Wykeham,) and that of Lord Saye and Sele, are the nearest descendants akin to the justly celebrated William of Wykeham, and are on the foundation both of Winchester and New College, Oxford. Mr. Stafford was first educated under the tuition of Dr. Philip Jennings, who, becoming tutor to the present Marquis of Breadalbane, Mr. S. was placed with the Rev. Michael Ward of Tamworth. The first rudiments of his surgical education he received at Cirencester under the father of the present eminent surgeon, Mr. Lawrence, and his partner Mr. Warner, in whose house he resided.

In 1820, Mr. Stafford came to London, as a student, and entered at St. Bartholomew's Hospital, attending the lectures and demonstrations given at that school. He was soon noticed by Mr. Abernethy, who conceived so well of his talents and application, that in 1823-4, he appointed him house surgeon to the hospital, and honoured him with his friendship, until his death

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RICHARD ANTHONY STAFFORD.

Having been admitted a Member of the Royal College of Surgeons in 1825, Mr. Stafford went to Paris and studied there for a year. In 1826, he returned to London, and commenced practice. The Royal College of Surgeons, in that year, proposed, for the Jacksonian Prize, "the Nature and Treatment of the Diseases, Distortions, and Injuries of the Spine." Mr. S. was induced to compete on this occasion; and to his Essay, the prize was awarded. In 1831, he was elected senior surgeon to the St. Marylebone Infirmary, which institution contains 320 beds, and has afforded him, in addition to his private practice, the opportunity of advancing the knowledge of his profession, and of introducing to his brethren some improvements in practice. These will be found in his published works, papers read before the Royal Medico-Chirurgical Society, and contributions to different Medical Journals which now demand our attention:—

On the Nature and Treatment of the Diseases, Distortions, and Injuries of the Spine. The MS. of this work, and the Drawings, are in the Library of the Royal College of Surgeons. The first edition, founded upon the Jacksonian Essay, was printed in 1832, and the second in 1839. It is inscribed to Mr. Lawrence, in grateful testimony, for a constant and unvaried friendship manifested towards the author for a long course of years, and the advantage derived by his instructions and example. This work has the merit of having been composed principally from the observation of cases at the bedside of the patient, and examination of the diseased parts after death. Its arrangement corresponds with that proposed by the Jacksonian Committee of the College.

The subject of *Spina Bifida*, I have already alluded to, in the Memoir of Sir A. P. Cooper, Bart., whose successful treatment of this malformation surpasses that of all other surgeons. The name of Spina Bifida was given to this deformity by the Arabian physicians, from their imperfect knowledge of its precise nature. It is neither a bifid nor a bifurcated spine; but it is a spine in which certain of the spinous processes are wanting, by which the natural bony protection of the spinal marrow is taken away, and the membranous sheath which contains this important part of the animal frame is thereby permitted to protrude, and being distended by a quantity of fluid it forms a mass or tumour, presenting in different cases a variety of appearances, and varying considerably as to its magnitude. The symptoms attendant upon these cases, are no less variable than their external characters. They may, however, be generally enumerated as consisting of more or less of paralysis of the lower extremities, a want of the power of retention on the part of the viscera contained within the pelvis, convulsions, emaciation, and general weakness. It must be evident to all who understand the nature

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of this deformity, that little is to be expected from any plan of treatment, but that which is to be supplied by mechanical means; and those must be directed with judgment as to the structure of the parts, and their operation in the animal economy. As the malformation is frequently connected with hydrocephalus internus, it will be apparent, that in those cases, all attempts at a remedy will be fruitless, and the adoption of them will only hasten the dissolution of the patient; but in other cases, where no reason exists to suspect the presence of fluid within the ventricles of the brain, a mode of treatment, which may be regarded as radical, may be attempted. Mr. Abernethy first suggested the making of occasional punctures to discharge the contained fluid, in agreement with the principle which he established for the cure of lumbar or psoas abscess. Sir Astley Cooper not only evacuated the fluid, but applied pressure afterwards in such a manner as to cause obliteration, by a process of adhesive inflammation; and those cases, which I have myself witnessed, I have referred to particularly in the memoir of that distinguished surgeon.

It is unnecessary, in this place, to dilate upon the various modes of treating spina bifida that have been put forth. The ligature and the seton have had their advocates, but are now abandoned; the authority of Benjamin Bell, Desault, and Richter was insufficient to give them prevalence. The method of Sir Astley Cooper is the only one which can rationally be pursued, and this will, in the majority of cases, be found to be of little service: it is, however, sufficient to have established a reasonable and a philosophical mode of relief, and the cases now in existence prove the validity of the practice. It has been questioned whether spontaneous cure of spina bifida ever takes place. Mr. S. has placed this beyond a doubt, by relating two cases in which nature has performed this salutary process.

Mr. Stafford has paid much and deserved attention to the distribution of the nerves passing from the spinal marrow in these cases, as such circumstances must necessarily operate in determining the mode of treatment to be adopted:—

"The usual origin of the spinal nerves, in their healthy state, is that they arise, by two series of filaments, from the anterior and posterior surfaces of the cord. Both of these proceed outwards, and being first separated by the ligamentum denticulatum, at length approach each other, and form two fasciculi of nerves; these pass through the dura mater by separate openings—the posterior fasciculus forming a ganglion, and the anterior being united to it by cellular tissue. After this point they join and form the proper spinal nerves, which again divide and subdivide, and supply the whole muscular part of the body."

"In spina bifida it appears that either part or all the filaments which form the posterior spinal nerves, corresponding to the solution of continuity of the vertebral canal, are distributed upon the internal walls of the tumor, and that they generally terminate there.

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These arise from the cord in various ways; sometimes only by single filaments, which pass out of the aperture of the canal, through the fluid contained in the tumor, unattached to any thing until they arrive at its parietes, where they are dispersed. Sometimes, again, the posterior spinal nerves come out of the opening in the canal, and instead of going straight through the fluid, pass round the internal surface of the tumour, and thus form a network of nervous filaments. Burgius mentions a case of this description, where the internal surface of the tumor was so surrounded by nervous columns and fibres, that it resembled the internal structure of the auricles and ventricles of the heart. In these cases there arises a kind of peduncle in the middle of the tumour, of a nervous mass, resembling a mushroom, of which the stalk is formed of filaments of nerves bound together by cellular tissue, and the head by their extremities spread out and extending upon the upper and internal surface of the tumour.

"The posterior spinal nerves, which are distributed upon the internal walls of the tumour, do not always pass through the aperture connected with the vertebral canal; but sometimes they pierce as it were the tumour, and then distribute themselves on the internal surface. There are two preparations of this description in Mr. Langstaff's museum: in the one they pierce the tumour at its back part, and pass straight through the fluid; in the other they also pierce the back part of the tumour, but they immediately curl round its walls.

"There appears to be some degree of regularity of the distribution of the nerves, when spina bifida occurs at the upper part of the canal; for here the posterior nerves are only involved in the disease, whilst, at the lower portion, the whole cord is continually influenced by it. Thus we see in some cases only a few nervous filaments erring in their course; while in others we find the whole bundle of nerves, which form the canda equina, going out of the canal and attaching themselves to the top of the tumour, and returning into it again."

Of *Injuries of the Spine.*—Mr. Stafford treats of Concussion, Fractures, and Dislocations; and relates several interesting cases of the different accidents observed by him, whilst house-surgeon at St. Bartholomew's Hospital. In connexion with the diseases of the bones of the spine, he makes some excellent pathological remarks on the Vertebræ, and Inter-vertebral substances, whence he enters upon a considerat ion of Rickets, Mollities Ossium, Tumours, Fungus Hæmatodes, &c.; also, the effects arising in the bones from Syphilis, Gout, Rheumatism, Scrofula, &c. The consequences of caries and ulceration of the spine are familiar to all surgeons; the curvatures, abscesses, &c. have always excited the deepest attention and interest, and the treatment necessary to be adopted is now pretty correctly ascertained by surgical writers. It is a duty, however, here to mention the names of Mr. Pott and Mr. Abernethy, as those to whom we are principally indebted for the present improved methods of treatment.

Of the diseases of the Medulla Spinalis and its Membranes we know but little; and until recent times these parts have been but rarely submitted to examination. Mr. Stafford treats of Arachnitis Spinalis, Hydro-rachitis,

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the Effusion of blood between the membranes, Cartilaginous specks on the arachnoid membrane, and Tumours found between the membranes. This part of Mr. S.'s work is to be looked upon rather as a collection from other authors, than derived from his own observation, though he has interwoven with the account many very ingenious remarks. The spinal marrow, itself, has, like the brain, been found sometimes of a harder or softer consistence than ordinary; and on the subject of the latter condition (ramollissement), the reader will do well to consult the excellent work of M. Rostan.

To the second edition of Mr. Stafford's work, he has subjoined a chapter on *Long-continued Contraction of the Lower Extremities;* and has ventured to suggest that many of the cases of Local Hysteria, so admirably described by Sir Benjamin Brodie, are to be referred to the medulla spinalis and its membranes. To remedy the contractions of the limbs, the consequence of injury to the spine, Mr. S. recommends the employment of an apparatus, which I have no doubt was the result of his own invention, but which appears to have been employed by ancient surgeons, as I find it depicted in a work (a copy of which is in my possession), entitled *The Noble Experyence of the Vertuous Handiwarke of Surgeri Practysd and Compyled by the moost experte mayster Jherome of Bruynswyke,* which was printed by *Peter Treveris in Southwarke,* in the year 1525, folio. The machine "consists of two splints joined by a hinge at the flexure of the knee-joint, one resting on the back part of the thigh, and the other on the calf of the leg; a bow made of iron, the extremities of which rest upon each splint, and through the centre of which passes a screw, which is also attached to the angle at the junction of the splints. A nut is turned on the screw, and presses on the centre of the bow; consequently, when the centre is pressed upon, the two extremities extend the splints." By the aid of this apparatus Mr. S. has succeeded in overcoming, by a gradual extension, deformities of very considerable extent, so that a return to healthy action has been effected.

A Series of Observations on Strictures of the Urethra; with an Account of a New Method of Treatment, successfully adopted in cases of the most obstinate and aggravated form of that disease. Lond. 1828, 8*vo.*

Further Observations on the Use of the Lancetted Stilettes in the Cure of Strictures of the Urethra. Lond. 1829, 8*vo.*

Observations on the Diseases of the Urethra, and more particularly on the Treatment of Permanent Stricture by Perforation and Division. Lond. 1839, 8*vo.* This forms the third edition of Mr. Stafford's work on the Diseases of the Urethra. It was judiciously observed by the late Mr. Abernethy, to whom this work was dedicated, that "no one can have thoroughly studied his profession without perceiving how susceptible it is of improvement;

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without discerning how inadequate the efforts of an individual must be towards the accomplishment of this purpose; and, consequently, without feeling an earnest wish to engage general co-operation in this desirable object." Mr. Stafford has been laudably impressed with the truth of this remark, and has attentively studied one of the most frequent diseases, and one oftentimes of the most serious nature, and presenting a host of difficulties with which the surgeon frequently finds it arduous to encounter. Mr. S. is not only satisfied of the efficacy and safety of the plan he recommends for the cure of the Permanent Stricture, but also of the rapidity and permanency of the cure. Of the safety of the plan proposed, in Mr. S.'s hands, or in those of skilful anatomists and surgeons, there can be no doubt, and the treatment of these cases ought not to be entrusted to any but those so qualified: the employment of cutting instruments in secret parts where the eye cannot reach, or the finger direct, by inexperienced persons, might be productive of very serious results. To those, however, Mr. S.'s observations are not directed; and whatever may be the opinion entertained of the value of Mr. S.'s proposal, there can be no question whatever as to its ingenuity and also its success in the hands of Mr. S. He says, that "In no instance has a false passage been made, nor have extravasation of urine, hæmorrhage, or any other bad symptom ensued." Strictures which have existed for years have been thus removed with but slight pain, in a very rapid manner—in the course of a month or six weeks. Mr. S. is entitled to the thanks of his professional brethren, for the candid manner in which he has detailed his practice. They have not, it must be said, been backward to avail themselves of his instruction; and Mr. S.'s third edition contains a variety of successful cases furnished to him by different surgeons. Mr. S. gives an account of the symptoms attending different kinds of Stricture; but dwells particularly on the treatment of Permanent Stricture, and gives a description of what he calls the Urethral Perforator, the Double Lancetted, and the Lateral-bladed Stilettes. For the application of these instruments the reader must consult Mr. Stafford's work.

In 1829, Mr. Stafford published a small volume, entitled *An Essay upon the Treatment of the Deep and Excavated Ulcer*. In these cases he proposes a plan, which in some instances will be found to be attended with beneficial effects. The difficulty of producing granulation in many deep sores is well known, and to these Mr. S.'s method is most applicable.

"It consists in pouring into the excavation melted wax, of an extremely adhesive quality, and just at that temperature when it is on the point of cooling, and will immediately become solid in the wound. In this manner the under surface of the wax, when cold, comes into close contact with the general surface of the ulcer, and the whole excavation is

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filled by it. Before employing it, however, it is necessary that one or two precautions should be taken: first, in order to clean the sore, as much of the pus as possible which rests upon it should be absorbed by dry lint; and, secondly, in order to avoid burning the patient, the wax should be at that point of heat which is called by chandlers *setting*; that is, a portion of it should cling to the sides of the vessel in which it was melted, and the rest should begin to thicken, and have somewhat of an opaque appearance. In this state it will not be at much more than blood heat, and it can be used with perfect safety. It is advisable, however, even when so far cooled, that a brush be dipped in it, and that the wax be allowed to drop from that into the sore. After the wax becomes perfectly solid in the ulcer, a strip or two of adhesive plaister may be applied over it, to keep it in its situation, when it may be left until it requires to be dropped again, which will be on the third day of its application. By pursuing this method of treatment, it will be found that healthy granulations will be produced, and appear upon the whole surface of the sore; that it will contract, and that the healing process will proceed very rapidly."

I have now to notice the papers contributed by Mr. Stafford to the Transactions of the Royal Medico-Chirurgical Society, and to the Medical Journals:—

(Vol. XX. p. 50.) *On the Treatment of Injuries received in Dissection.* The severe, and often fatal symptoms of constitutional irritation following wounds received in the examination of morbid parts, and in the prosecution of anatomical inquiries, render this paper one of considerable interest. Mr. S. has detailed several cases occurring to distinguished members of the profession; and the case of the late Dr. John Sims is particularly valuable, as serving to point out the only correct means in which such an affection is to be treated. Local bleeding, fomentations, and a free incision into the part, either to relieve the tension, unload the vessels, or admit of a free exit of pus, should it be formed, constitute the chief of the external mode of treatment. Internally, opium (and the form of the muriate of morphia is to be preferred from the quickness and certainty of its action) and attention to the alvine discharges. The application of the nitrate of silver appears to have been attended with advantage, when rubbed above or beyond the seat of the inflammation, and serves to arrest the progress of the disease.

A Case of Enlargement of the Prostate Gland in a Child of five years of age. This curious, and I believe unique case, was communicated to the Society in February last, and will appear in the next volume of the Transactions. The case occurred in St. Mary-le-bone Infirmary. There was retention of urine, and the boy died from exhaustion. The prostate gland was the only diseased organ in the body; it was of the size of the largest walnut, and the third or middle lobe was as large as the whole gland in its normal state

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at that period of life. It was of a brain-like consistence, with several patches throughout its whole structure, of a purple hue, resembling melanosis.

In the 69th volume of the *London Medical and Physical Journal*, Mr. S. has printed an account of some *Cases of Strangulated Femoral Hernia.* In one of these, the hernial sac appeared to be divided in three layers, and fluid was contained between each of them. In another case, upon the division of the femoral ring, about a quart of serum immediately rushed down from the cavity of the peritoneum. All deviations occurring in cases of hernia are deserving of notice.

In the *Edinburgh Medical and Surgical Journal*, (Vol. XXXV. p. 358,) Mr. Stafford has published *Two Cases of Enlargement of the middle or third Lobe of the Prostate Gland, successfully treated by Perforation and Puncture.* In these cases, he employed his lancetted stillettes with great advantage. The prostate gland is not a part possessing a very high degree of sensibility, nor are wounds into its substance attended by profuse hæmorrhage. Mr. S.'s method of puncturing through an enlarged third lobe appears to be a very preferable method of relieving retention of urine arising from this cause to the forcing of a catheter through the gland.

In the same work (Vol. LI. p. 363) Mr. Stafford has a paper *On Division of Stricture of the Rectum high up in the Gut.* In two instances he has successfully employed his instruments to relieve this kind of stricture. The greatest caution is requisite in the performance of this operation, which, rashly executed, might be attended with fatal consequences.

The works and papers written by Mr. Stafford, and thus briefly noticed, will demonstrate the anxiety he feels to advance the science to which he has devoted himself, and the esteem they have obtained for him, from various distinguished members of his profession, will, I trust, serve to stimulate him to further exertions. His researches have been conducted upon a legitimate basis—they have been grounded upon an accurate anatomical knowledge, and a careful investigation of the functions of the animal economy in health and in disease. His adaptation of mechanical means to the relief of certain affections, which I have endeavoured to detail as correctly as the limited extent of a memoir like the present will permit, have been attended with the happiest effects; and it is to be hoped that no professional jealousy may interfere to prevent the employment of a means which appears likely to afford relief to a class of cases of the most distressing nature, and which are often found to terminate in the destruction of the life of the individual.

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Thomas Young

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THOMAS YOUNG, M.D., F.R.S.

&c. &c. &c.

"I have taken all knowledge to be my province."
BACON.

THE parents of Dr. Young were quakers, and strict in the observance of the principles which distinguish that sect. These, it is probable, in a mind constituted like that of the subject of this memoir, contributed not a little to impart to his character a determined resolution to accomplish any object in which he engaged, and which has led to some of the most important discoveries in literature and science that the age has produced. He was born at Milverton, in Somersetshire, June 13th, 1773, and was the eldest of ten children. His mother was a niece of the celebrated Dr. Brocklesby. He manifested, at a very early period, great powers of memory and application, for when little more than two years old, he could recite English and Latin poems, although unacquainted with their meaning. He was placed at a seminary, at Bristol, under a teacher ill qualified to promote the education of his pupil. In the holidays, he was noticed by a land surveyor, who discovering his aptitude and inclinations, indulged him with the use of mathematical and philosophical instruments, and lent to him a dictionary of arts and sciences which contributed to lay the foundation of his future eminence. In 1782, he was placed under the tuition of a competent master, of whom he always spoke with great respect, Mr. Thompson, of Compton, in Dorsetshire. With this teacher he acquired an ordinary knowledge of the Greek and Latin classics, and the elementary parts of mathematics, and with the assistance of a school-fellow, he made himself acquainted with the French and Italian languages. His genius also manifested itself by

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attempting the construction of a microscope, from the description given of that instrument by Benjamin Martin; and he entered upon the study of botany, and made an examination into the structure of plants. The use of the microscope naturally led his attention to optics. To form the instrument, he was under the necessity of procuring a lathe; and thus a passion was excited for manual dexterity, and only diverted by meeting with a demonstration in Martin's work, exhibiting some fluxional symbols which, however, he mastered by making himself familiar with a short introduction to the doctrine of fluxions.

Young's genius for languages had already shown itself; but it was further evinced by Mr. Thompson leaving in his way a Hebrew Bible, which he minutely studied, and thus he commenced an acquaintance with the oriental languages. When only fourteen years of age, the time he quitted Mr. T. he was more or less versed in seven languages, in addition to his mother tongue, namely, Greek, Latin, French, Italian, Hebrew, Persian, and Arabic. Such acquirements, at so early an age, gave hopes of extraordinary future excellence. His relations were not slow to form a proper estimate of his talents, and attention was now being directed to his destination in life. At this time he accidentally met with Mr. David Barclay, of Youngsbury, in Hertfordshire, the grandfather of Hudson Gurney, Esq., concerning whose education Mr. B. was particularly solicitous. This was a most fortunate circumstance for Young, as an arrangement was made for the conjoint pursuit of their studies in Mr. Barclay's house, and a tutor was engaged. Circumstances, however, occurred to prevent this gentleman fulfilling his engagement; and Young, not quite two years senior to his companion, undertook the office of preceptor, and became, even afterwards, when a competent person (Mr. Hodgkin, the author of Calligraphia Græca) had been obtained, mainly the director of the studies of the whole party. M. Arago relates a curious anecdote connected with Young's reception into the house of Mr. Barclay. That gentleman required of Young to give him an example of his writing, and for the specimen offered to him some phrases to copy. Young requested leave to withdraw a while, and upon his return, he presented to Mr. Barclay the phrases not only most beautifully written (for his caligraphy was excellent) but put into nine different languages.

The possession of such extraordinary talent at the early age of fourteen, was not unaccompanied with an alloy. He soon exhibited symptoms which gave rise to fears of incipient consumption. His health was, however, restored by the attention of Dr. Brocklesby and Baron Dimsdale. His course of studies was interrupted, but he was permitted to relieve the weariness of his confinement by a perusal of some Greek authors calculated

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to afford him amusement. During his residence at Youngsbury, he not only attended to his own studies, but was solicitous of the improvement of his sister. From a letter, dated 15th November 1788, addressed to his mother, I extract the following passage:

"I have lately paid a good deal of attention to the study of Astronomy, and as I have received much pleasure from this science, it is very natural to wish to communicate a share of it. My eldest sisters have now, I flatter myself, attained a pretty good idea of the rudiments of Geography, for which they are much indebted to the assistance of our kind friend, P. H.; and if the plan meet their approbation, I would endeavour to explain to them, as clearly and as familiarly as my knowledge of the subject would admit, the first elements of astronomy. I would not encroach on their more important engagements by the length of my letters, and by treating the subject in as concise a manner as possible, should hope to comprise it in little more than a dozen letters. Please to inform me whether or not this plan is entirely agreeable to your inclinations; if it be so, this will be some encouragement to begin in my next."

A memoir drawn up from his own notes, by his constant friend and companion, and prefixed to the "Rudiments of an Egyptian Dictionary," gives us the information, that during a residence of five years in the summer in Hertfordshire, and in the winter in London, and with the assistance only of a few occasional masters in town, Mr. Young had rendered himself

"singularly familiar with the great poets and philosophers of antiquity, keeping ample notes of his daily studies. Of the various and conflicting opinions of the ancient philosophers, he had drawn up a most admirable analysis; and as his reading was not merely the gaining words and phrases, and the minuter distinctions of dialects, but was invariably also directed to what was the end and object of the works he laboured through, it is probable that the train of thought into which he was led in this analysis, was not without its effect, in somewhat mitigating his attachment to the peculiar views of the sect amongst whom he had been born. He had acquired a great facility in writing Latin. He composed Greek verses which stood the test of the criticism of the first scholars of the day, and read a good deal of the higher mathematics. His amusements were the studies of botany and geology, and to entomology in particular he, at that time, gave great attention."

In 1790—1, he attended the lectures of Dr. Higgins on chemistry, and Dr. Brocklesby undertook the supervision of his future education, and his introduction into the medical profession, which it was intended he should embrace. His uncle associated with all the most eminent men of his day, and justly proud of his nephew's talents, he exhibited to Mr. Burke

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and to Mr. Windham, some of his translations from the Greek. To the astonishment excited by those productions may, in some measure, be attributed the deep interest his uncle took in his future welfare. Mr. Gurney says, Young was never known to relax in any object which he had once undertaken; nor did he permit any circumstances to discompose his temper—

"Whatever he determined on, he did. He had little faith in any particular aptitude being implanted by nature for any given pursuits. His favourite maxim was, that whatever one man had done, another might do; that the original difference between human intellects was much less than it was generally supposed to be; that strenuous and persevering attention would accomplish almost any thing; and at this season, in the confidence of youth and consciousness of his own powers, he considered nothing which had been compassed by others beyond his reach to achieve, nor was there any thing which he thought worthy to be attempted, which he was not resolved to master."

In 1792, he commenced his attendance upon anatomical and medical lectures, and he also entered to the Practice of St. Bartholomew's Hospital. He attended the Anatomical Lectures of Baillie and Cruikshank, and the Demonstrations of Wilson; the Surgery of John Hunter, the Practice Physic of Dr. (now Sir Alexander) Crichton, the Midwifery of Dr. Clarke and Dr. Osborn, the Botany of Sir J. E. Smith, and a short Course of Lectures on the Practice of Medicine, by Dr. Latham, which I think was delivered at St. Bartholomew's Hospital. I have now before me the notes of these different courses of lectures, and they are highly interesting. They form a true picture of the mind and qualifications of the student. Occasionally they are written in Latin—an extract or passage from a Greek author is sometimes interposed; and it may be presumed that during the space previous to the entry of the lecturer, he amused himself by making some calculations, or entering upon a mathematical demonstration, as many are to be found among his notes. His *Prælectiones Anatomicæ* open with an introductory discourse by Dr. Baillie, which is thus characterized: *Introductio generalis præcipue historica et monitoria, satis elegans, laude non indigna.* Then follows a Demonstration by Mr. Wilson, on the Muscles of the Back, with references, by numbers, to Winslow's work, which marks out the course of inquiry and research made by the student upon his return from the demonstration. The Course of Lectures by John Hunter is stated to have been read by Mr. Everard Home. This must have been in the year 1793, when the great physiologist died; and examining the notes with the particulars I have elsewhere given relating to Mr.

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Hunter's death, I find, on the day on which the world was deprived of that great man, the following passage, which is deeply interesting and characteristic of the elegant mind of Young.

> " Hei mihi ! quantum Præsidium
> Ausonia, et quantum tu perdis Iule !"

At the conclusion, Mr. Young has written : " We have gone through this course. It will never be repeated. It was only in hopes that Mr. Hunter would have given practical lectures next winter. To keep the days open for him, I (Mr. Home) wished him to think himself pledged to go on. I mean to avail myself of his notes, and to give a practical course of operations next winter." Mr. Young attended a second course of the lectures of Baillie and Cruikshank, which is stated to have been the forty-second in which Cruikshank had been concerned.

Having thus passed two sessions in London, Mr. Young made a tour into the West of England, principally with a view to the study of the mineralogy of Cornwall. The duke of Richmond, who was at that time master-general of the ordnance, offered to him the situation of assistant secretary in his house. Mr. Burke and Mr. Windham recommended him to proceed to Cambridge, and to enter upon the study of the law; he, however, remained attached to medicine, to which we may reasonably presume his uncle, Dr. Brocklesby's position would incline him.

In 1793, before he had taken his degree, he presented to the Royal Society, through Dr. Brocklesby, *Observations on Vision.* In 1794, he was elected a fellow of the Royal Society, and went to Edinburgh, then the principal school of medicine, and attended the lectures of Drs. Black, Monro, and Gregory on chemistry, anatomy, and physic. After a session thus spent, he departed for Göttingen, in 1795, and there took his degree of doctor of medicine, adopting as the subject of his thesis *De Corporis Humani Viribus Conservatricibus*; and agreeably to the custom at this university, he delivered a lecture on the formation of the human voice, a few pages of which containing a table of articulate sounds, were printed at the end of the thesis. No plan could be more congenial to Young's taste, or furnish to him more abundant food for his pursuits, than the university and libraries of Göttingen. His thesis illustrates the application he made of such advantages, and he appears scarcely to have left a volume unconsulted, that had any connexion with the subject of his inaugural discourse.

The following extract from a letter written to his mother, prior to quitting Edinburgh, will interest the reader :

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"The present plan of my proceedings is this: to leave Edinburgh early in the summer: to spend the summer in travelling through Scotland, the north of England, Wales, and back by Shropshire, to London; in the autumn to proceed either to Leyden, or more probably by way of Hamburgh to Göttingen; after graduating there, to take a circuit towards Vienna, and thence to Pavia, Rome, and Naples—after this I must be regulated by the state of politics—I expect many advantages from spending two years on the continent: not but that I believe almost all that can be known of physic might be learnt, if necessary, in London: this to one who reasoned only from speculation, and had observed but little of the actual state of society, might be deemed a sufficient reason for sparing ourselves the pains and danger of a long peregrination. But besides that I by no means wish to confine the cultivation of my mind to what is absolutely necessary for a trading physician, any one, who has been acquainted with the world, must have seen numbers of men, fully qualified for applying what little knowledge we have of the secrets of nature to the cure of diseases, linger (for want of some additional qualifications) between poverty and competence, having enough practice to induce them to continue in the profession, and too little to support them with comfort: every now and then, indeed, we see some of these emerge by mere accident from this state of obscurity, and persuade the credulous world that they leave their brethren infinitely behind them in all professional knowledge. There are many qualifications not immediately subservient to the practice of physic, which decidedly tend to advance the reputation of a practitioner; some by exercising his mental powers and giving acuteness to his faculties, some by showing his capacity to attain a knowledge of indifferent matters to which he may apply, and inducing the world to conclude that the same powers, applied with superior efforts to the science which makes his principal employment, will produce a proportionate degree of skill in this also; others again, by making a man fitter for passing through the various scenes of life with satisfaction to himself and pleasure to his acquaintance, and making his company and his friendship desirable to all lovers of virtue and elegance. If these qualifications have sometimes been thought incompatible with deep science, it is not so much to be attributed to the impossibility of their junction, as to the laziness and irresolution of those who have foolishly neglected the one to pursue the other. On these and similar grounds I have hitherto conducted my studies; on these principles I still regulate my employments; and for the same reason I think I cannot better spend the next two years of my life, than in attending (at the same time that I continue my scientific pursuits under the most eminent professors in different parts of Europe) to the various forms into which the customs and habits of different countries have moulded the human mind; in imitating what is laudable, and in avoiding what is culpable, and in exerting myself to gain the acquaintance and friendship of the virtuous and the learned."

In another letter from Göttingen, he says:—

22nd November, 1795.

"I am settled here for four or five months at least, and perhaps for as much more: I find it a very convenient place for study: a number of professors of considerable merit in different branches. I have not much society either to amuse or to interrupt me: there

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are three English students here besides myself, two of them diligent and attentive, the other a man of fortune, and more dissipated: we are well acquainted, but do not wish to be much together, and have engaged under a penalty of a forfeiture never to speak English to each other after the first of next month. My time is so portioned out to different instructions, that when I attend to them all, I have very few hours in the week unoccupied. I begin at eight with lectnres on history: then follow others on medicine and natural history. I have taken two good rooms in the pleasantest part of the town, in a house which Professor Arnemann lets out to students: a man and his wife live in the house to wait on them all. I breakfast in my own room: dine at an ordinary composed chiefly of students, at 12, which is the common hour throughout the university; and in the evening eat an egg alone."

April 24th, 1796.

"I am within a hundred yards of the second library in Europe, and can have any book I wish to consult on sending for it; this is the chief reason for my desiring to graduate here.

In any thing which relates to this or to other proceedings, I would not rashly give up the privileges of a member of the Society of Friends, and I have already, on this ground, asked, and obtained leave to be admitted to a degree without an oath; a case which was here perfectly new."

July 18th, 1796.

"I should have written some posts ago, but I have been in some degree interrupted by preparing to take a degree: the ceremony took place the day before yesterday: no difficulty was made with respect to the oath, and the whole time passed away very lightly, and with as much credit as I could possibly wish for. I shall now remain only a few days here; I should be glad to have a letter sent so as to arrive in about two months, directed T. Y. Dresden, *à la poste restante.*"

At Dresden, he was led to contemplate the different styles of the great masters of painting, as exhibited in their works contained in the galleries of art. He also visited Berlin, and he gained an intimate acquaintance with the language and literature of Germany, which he ever after carefully cultivated. Finding, upon his return to London, that he could not immediately be admitted a licentiate of the College of Physicians, he went to Cambridge, and entered as a fellow commoner at Emanuel, where he resided during three years, pursued his studies, and took his doctor's degree.

In 1797, he received an accession of fortune and a considerable library by the death of his uncle, Dr. Brocklesby. He returned to London, took a house in Welbeck-street, and commenced practice. He formed acquaintance with the most eminent philosophers and literati, and, in 1802, was appointed professor of natural and experimental philosophy at the Royal

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Institution, where he gave regular courses of lectures. Of these lectures, he printed a Syllabus, in which is to be found the first publication of his discovery of the general law of the *Interference of Light;* being the application of a principle that has been correctly described as "one of the greatest discoveries since the time of Newton, and which has subsequently changed the whole face of optical science." The lectures of Dr. Young were published in 1807, in 2 vols. 4to., as *A Course of Lectures on Natural Philosophy and the Mechanical Arts*, and they contain more original matter, and the rudiments of more discoveries in natural science, than perhaps any other volumes that can be named. Yet the style of them is not adapted for general perusal, nor calculated to excite the attention of youthful minds so strongly as more elementary works. The author is too laconic; the matter is too abundant, and too much condensed for minds that do not surpass the ordinary degree of power, and the professor gives credit to his readers for more knowledge than they can fairly be generally estimated to possess. The same fault, though perhaps in a greater degree, applied to his mode of lecturing on other subjects, hence he did not become a popular lecturer. The composition of his work occupied his attention during five years. The second volume comprises a mass of references by which the student can be immediately made acquainted with the sources whence any information on the subject he requires may be most readily obtained.

In 1802, he accompanied the present Duke of Richmond and Lord George Lennox in a medical capacity to Rouen, and thence made an excursion to Paris, and was present at some of the discussions in the Institute. He formed an acquaintance with many of the leading men of this most distinguished body, and upon his return to London, in 1804, he was chosen foreign secretary of the Royal Society.

Dr. Young was exceedingly happy in a matrimonial alliance he formed in the same year with Miss Eliza Maxwell; but he left no issue. Upon his marriage he abandoned his professorship at the Royal Institution by the advice of his friends who considered it likely to interfere with his success in his profession. It has been said by M. Arago, that "En Angleterre, un médecin, s'il ne veut pas perdre la confiance du public, doit s'abstenir de s'occuper de toute recherche scientifique ou littéraire qui semble étrangère á l'art de guérir." This is unfortunately too true, and it was deeply lamented by Dr. Young. He who devotes his attention to the cultivation of the collateral sciences of medicine, or to the promotion of general science or literature, must be content to be regarded as unfit to be a good practical physician or surgeon. All writers upon professional knowledge, however, agree as to the variety and extent of learning necessary to form the experienced practitioner. It is

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possible that the time requisite for the profound attainment of such knowledge may, in ordinary cases, preclude that attentive observation of nature which is so essential to the complete understanding of the phenomena of diseases and their necessary remedies. Let not, however, this admission be made available for the defence of ignorance of the auxiliary sciences too much contemned in the present day by medical men. Such acquisitions, too frequently give rise to envy and jealousy on the part of the members of the profession, and accusations are put forth as an excuse for their own lamentable insufficiency and ignorance. Whatever may have been the intentions of Dr. Young, or however sincere his determination to confine himself to medical studies, it will readily be admitted that he had resolved upon that which to him was impossible. We are indeed told that he never slackened either in his literary or philosophical researches, and that he was always aiding and consulting others engaged in similar pursuits. He put forth many papers without his name bearing two letters from the sentence *Fortunam ex aliis*. These, however, were well known to his immediate friends, and they were not under any obligation to secrecy upon the subject, so that his labours were readily recognized.

Easy in his circumstances and blest with comfort in his domestic relations, Dr. Young passed his winters in London and his summers at Worthing; and in 1810, he was elected physician to St. George's Hospital, having in 1808, been admitted a Fellow of the Royal College of Physicians. But he was not a popular physician. He wanted that confidence or assurance which is so necessary to the successful exercise of his profession. He was perhaps too deeply informed, and therefore too sensible of the difficulty of arriving at true knowledge in the profession of medicine, hastily to form a judgment; and his great love of and adherence to truth made him often to hesitate where others felt no difficulty whatever in the expression of their opinion. He is therefore not celebrated as a medical practitioner; nor did he ever enjoy an extensive practice; but in information upon the subjects of his profession, in depth of research into the history of diseases, and the opinions of all who have preceded him it would be difficult to find his equal. His work on Consumptive Diseases is the evidence I would offer in support of this assertion. There is not an author of any note or celebrity—there is not a point connected with the disease which merits attention, that is not there most carefully, most accurately put forth. It is a medical library upon the subject of which it treats; the whole body of ancient and modern medicine in relation to Consumption is included within the small compass of an octavo volume. There are but two medical works in the English language entitled to this distinction, Dr. Young's, on Consumptive Diseases, and Dr. Cooke's on Ner-

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vous Diseases. Each has proceeded from a most distinguished scholar, and each gives in a condensed form an original and authentic abstract of the opinions of all preceding authors on the subject of the particular diseases which form the topics of their consideration. If such a scheme as has been thus carried out by these two learned men could be pursued, how much time might be saved to the student, and how greatly diminished might be the shelves of our present libraries! But it is vain to indulge the expectation for there are too few qualified to accomplish such an undertaking.

In 1813, Dr. Young published *An Introduction to Medical Literature, including a system of Practical Nosology.* Analysis of such a system cannot in this brief memoir be entered upon; but there are a few subjects connected with the work which here merit notice. To the work the author has attached some Essays on particular subjects: *On the Study of Physic—On Classification—On Chemical Affinities—On Animal Chemistry—On the Blood, and on the Medical Effects of Climates.* In the Preliminary Essay on the Study of Physic, he enters upon a consideration of the qualifications of a practitioner. There is scarcely a subject in the whole range of scientific inquiry which he does not hold to be a necessary acquisition to the professional man. A perusal of this Essay brings to my recollection the statement made on the same subject by Avenzoar:

"Every physitian ought to know first learning, and then practise, that is to say, first to learn grammar to understand what he doth read in Latin, then to have logick to discusse or diffine by argumentation the truth from the falsehoode, and so *e converso*. And then to have a rhetorick or an eloquent tongue, the which should bee placable to the hearers of his words. And also to have geometry to ponder and waie the dregs or portions, the which ought to be ministred. Arithmetick is necessarie to bee had concerning numeration: but above all things next to grammar, a physitian must have surely his astronomy, to know, how, when, and at what time every medicine ought to be ministered; and then finally to know Naturall Philosophy, the which consisteth in the knowledge of naturall things. And all these things had, then is a man apt to studie phisick by speculation, and speculation obtained, then boldlie a man may practise phisick."

Dr. Young's detail of qualifications exceeds that of the celebrated Arabian Physician. To realise the picture we must seek for a Young. His own opinion of the difficulty is expressed in the following passage: "There is no study more difficult than that of physic: it exceeds, as a science, the comprehension of the human mind." He marks out the course of study to be pursued by the medical pupil, and his work is intended to point out the

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sources whence the best information is to be found. His references therefore, are select not diffuse as in the works of Haller and Ploucquet, the object being not to tell what has been written on any given subject but what is worthy to be consulted. Were this work carried on to the present time it would form an exceedingly valuable addition to our medical literature.

Dr Young's attention was directed to the subject of Nosology by being engaged to deliver *A Short Course of Lectures on the Elements of the Medical Sciences* at the Middlesex Hospital, a duty he fulfilled during two years, and of these lectures he published a *Syllabus*. He was at first disposed to acquiesce in the Nosological arrangement of Cullen; but upon consideration he could not admit his classification, and was therefore led to propose one which he regarded as liable to fewer objections. It is founded on the principle which guided Linnæus in his *Philosophia Botanica*. Every system of Nosology, however, is so open to objection, presents so many difficulties, so many anomalies, and the symptoms characteristic of diseases are so various, that any arrangement proposed cannot be accepted as perfect. The arrangement is simply for the convenience of practical researches; the nature of the subject eludes the possibility of perfection. The truth is, the uncertainty of medicine is so great, the want of uniformity in the phenomena so considerable and so widely different from what is observed in the other branches of physical science, that the characters and the progress of diseases, as well as the action of external agents upon the body cannot be noted or arranged with any thing like certainty or precision.

The opinions of Dr. Young as to the progress in practice likely to be obtained by an aspirant in medicine are not very encouraging:

"In a metropolis, it is indispensably necessary, that a physician should be prepared whatever his abilities may be, to pass at least ten years after his first establishment without the slightest emolument from his profession; and he may think himself singularly fortunate if, at the expiration of this period, he is enabled to derive a competent subsistence from it."

In the Essay on the Blood, he enters upon a consideration of the minute particles of that fluid, and of Pus, and describes an instrument which he calls an *Eriometer* for the measnrement of them. It is so named from its utility in measuring the fibres of wool. It is a micrometer of exceeding accuracy. The Essay on the Medical Effects of Climates contains some

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excellent observations on Meteorology. A second edition of the Introduction to Medical Literature, was published in 1823. Many additional references are given, and an Essay on Palpitations, which had appeared in the 5th vol. of the Transactions of the Royal College of Physicians, the object of which is to explain the pulsation felt in the neck in some cases of water in the chest and which has frequently been erroneously attributed to aneurysm. The illustration is exceedingly ingenious. To the paper, are appended some cases of Epilepsy relieved by *large* doses of the oil of turpentine.

The *Practical and Historical Treatise on Consumptive Diseases* before alluded to, made its appearance in 1815, and will always be esteemed as a most correct monograph of the disease. The Essay on Climates from his Medical Literature is prefixed to this work.

It was about this time that Dr. Young directed his attention to the subject of Egyptian Hieroglyphics. I know of no discovery of a literary nature which can admit of comparison with that effected by Dr. Young in his examination of the Rosetta Stone in the British Museum. It furnished to him the *key to the lost Literature of Egypt.* The labours of De Sacy and Akerblad had been productive but of scanty results; they proceeded only to the indentification of a few parts of the inscription. De Sacy was the first to compare the Greek inscription on the trilinguar stone with the enchorial and the hieroglyphic, and made out the names of Alexander, Alexandria, and Ptolemy. But he could proceed no further. Akerblad failed in his attempt to construct an alphabet, but distinguished some numerals. Dr. Young has detailed the manner in which he proceeded in his inquiry, in the article Egypt, in the Supplement to the Encyclopædia Britannica, to which I must refer the reader for particulars. It is sufficient here to state that his labours in the field of Egyptian literature have been justly pronounced to be " the greatest effort of scholarship and ingenuity of which modern literature can boast."

In 1817, Dr. Young again visited Paris upon professional business and resumed his connexion with the philosophers of the Institute, Humboldt, Cuvier, Biot, Arago, Gay Lussac, &c. By a commission under the Privy Seal, he was appointed in 1818 a commissioner for taking into consideration the state of the weights and measures employed throughout Great Britain; and in this inquiry he was associated with Sir Joseph Banks, Dr. Woolaston, Mr. Davies Gilbert, Sir George Clerk, and Captain Kater. Dr. Young was secretary to this board, and the scientific calculations contained in the three reports which were presented to Parliament were prepared by him. In this year also he was appointed secretary to the Board of Longitude,

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having been nominated without his knowledge one of the commissioners, under an Act brought in by Mr. D. Gilbert and Mr. Croker. He made a tour into Italy in 1819, and visited the most remarkable cities, examining all objects of interest in his way.

In 1823, Dr. Young removed to a house in Park Square, which he had built, and where he resided during the remainder of his life, leading the life of a philosopher and surrounded by friends who knew full well how to appreciate his commanding talents and high moral excellence. We are told that "he expressed himself as having now attained all the main objects which he had looked forward to in life as the subject either of his hopes or his wishes. This end being, to use his own words, "the pursuit of such fame as he valued, or of such acquirements as he might think to deserve it." Dr. Young's character appears to have been formed from the first: this is singularly evidenced in some of his early letters to his mother now before me. The following extracts will interest the reader:—

1791. "I am of opinion that nothing is of so much weight in forming a man's character as the treatment he receives from the time of his leaving his nurse's arms. I have very great reason to be thankful that it was my lot to have such parents and relations as are mine; whom, setting all natural affection aside, I would not change if it were in my power for the most renowned, learned, and opulent characters."

1793. "Leisure and application are the great requisites for improving the mind: leisure is useless without application; but application with a very little leisure may produce very material benefit. If you are careful of your vacant minutes, you may advance yourselves more than many do who have every convenience afforded them."

1794. "If I have any one principle firmly fixed on my mind, it is never to shun present inconvenience where it will produce permanent satisfaction. As for the applause of the world I have often expressed my contempt of it *in itself*."

1794. *Upon his election into the Royal Society.* "Thy maternal and religious affection towards me, appears as it always has done, in thy kind advice; and I approve thy judgment at the same time that I am obliged by thy care, when, instead of expressing a childish pleasure as many weak parents would do, at what might be esteemed an honourable gratification of their vanity, my dear mother refers this as well as all other circumstances, to the most important consideration, that can engage us for ourselves or for others,—the improvement of the heart and fulfilling of the ends of our creation. I hope I am not thoughtless enough to be dazzled with empty titles which are often conferred on weak heads and on corrupted hearts; nor do I agree with those moralists who allow ambition to be laudable as an

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ultimate object of human conduct. And, considering that I am much more interested in my own welfare than others can be for me, I trust I am equally desirous with thyself, that I may comply with those injunctions which are laid on me, and obey, as far as I am able, and if I am not able it is my own fault, every moral and religious duty. This particular line of conduct each of us must determine according to the best of his judgment, and, if my opinion in some few respects should differ from thine, and lead me, as at a future time it possibly may, into some slight variations, I hope our mutual charity will induce us not to doubt of the purity of each others motives."

1798. "I differ from those who think love of fame *alone* a laudable motive of action, certainly the higher a man's character stands with the world the more likely he is to be successful in a profession, and this is an object which must be allowed in the present state of society to require attention."

To his Brother.—"Although I have readily fallen in with the idea of assisting you in your learning, yet it is in reality very little that a person who is seriously and industriously disposed to improve may not obtain from books with more advantage than from a living instructor: something is wanting for the duration of application in the right path, but it must be the strength of the traveller and not of the guide that must conquer the difficulties of the journey. Masters and mistresses are very necessary to compensate for want of inclination and exertion: but whoever would arrive at excellence must be self-taught, as I lately heard mentioned by one of the first scholars in Europe."

It would be easy to multiply these interesting notices; but it would extend my memoir much beyond my plan. I therefore pass on to observe in continuance of his career, that in 1827 he was elected one of the eight Foreign Members of the Royal Institute of France. Although Dr. Young had only reached his fifty-fifth year, he began to manifest symptoms of declining health. The wear and tear of the mind and body (for the two are to a certain degree inseparably connected) attendant upon studies of such magnitude as those which had throughout life engaged Dr. Young's attention began to manifest themselves in a very formidable manner. In the summer of 1828, he experienced great fatigue upon making any bodily exertion, though the powers of the mind suffered no diminution of energy. Yet he was not free from mental anxiety, for the subject of the board of Longitude had been brought particularly under the notice of Parliament, and its abolition was resolved upon. By this proceeding some eminent professors of the Universities were deprived of their appointments, and the manner in which the services of scientific men had been neglected gave rise to much complaint and bickering. This unavoidably led Dr. Young into matters of discussion and dispute, by which he was much harrassed,

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and it certainly contributed to hasten on the disease which ultimately proved fatal to him. He was selected by the board of Admiralty to make the calculations for the Nautical Almanack and afterwards associated with Mr. Faraday and Captain Sabine to perform the duties which before were attached to the Board of Longitude. In February 1829, he suffered much from difficulty of breathing, and in April had some discharges of blood from the lungs. It was evident to his friends Drs. Chambers and Nevinson, that there was serious mischief in the chest and he was himself quite aware of his situation. One who knew him well, says

"Though thus under the pressure of severe illness, nothing could be more striking than the composure of his mind, or could surpass the kindness of his affections to all around him. He said that he had completed all the works on which he was engaged, with the exception of the rudiments of an Egyptian Dictionary, which he had brought near to its completion, and which he was extremely anxious to be able to finish. It was then in the hands of the lithographers, and he not only continued to give instructions concerning it, but laboured at it with a pencil when, confined to his bed, he was unable to hold a pen. To a friend who expostulated with him on the danger of fatiguing himself, he replied that it was no fatigue, but a great amusement to him; that it was a work which, if he should live, it would be a satisfaction to him to have finished; but, that if it were otherwise, which seemed most probable, as he had never witnessed a complaint which appeared to make more rapid progress, it would still be a great satisfaction to him never to have spent an idle day in his life.

"His last anxiety concerning the proceedings of one or two persons who had made him the object of reiterated attacks, in consequence of being dissatisfied with the arrangements of the Nautical Almanack, was, that nothing should go forth on his part to increase irritation; and when papers were sent him which went to enumerate and to prove the errors into which those individuals had fallen, his desire was that they should be suppressed.

"In the very last stage of his complaint, in the last lengthened interview with the writer of the present memoir, his perfect self-possession was displayed in the most remarkable manner. After some information concerning his affairs, and instructions concerning the heiroglyphical papers in his hand, he said that, perfectly aware of his situation, he had taken the sacrament of the church on the day preceding; that whether he should ever partially recover, or whether he were rapidly taken off, he could patiently and contentedly await the issue; that he thought he had exerted his faculties through life as far as they were capable of, but that for the last eight years he had been careful of straining them to more than he thought they could compass without injury; that he had settled all his concerns; that if his health had been continued to him he might have looked forward to the production of much that was to be enjoyed; but that, though he was in no other suffering than that of great oppression and weakness, still that if life were continued in the state he was of inability to any of his accustomed employments, he could hardly wish it to be long protracted.

"His illness continued, with some slight variations, but he was gradually sinking into greater and greater weakness till the morning of the 10th of May, when he expired without a struggle, having hardly completed his 56th year. The disease proved to be an ossification of the aorta, which must have been in progress for many years, and every appearance

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indicated an advance of age, not brought on, probably, by the natural courses of time, nor even by constitutional formation, but by unwearied and incessant labour of the mind from the earliest days of infancy. His remains were deposited in the vault of his wife's family, in the church f Farnborough, in Kent."

"Ossa quieta precor, tutâ requiescite in urnâ;
Et si humus cineri non onerosa tuo."

In the preceding pages I have noticed Dr. Young's distinct medical publications. In literature and general science he was still more eminent. Upon these subjects, however, little beyond a mere enumeration of them can here be admitted. My object has been principally to point out the nature of his medical researches and to estimate his medical character. I must leave to other and more competent hands the task of doing full justice to his various and extraordinary talents and merits. The diversity, I had almost said universality, of these, demands the pen of no ordinary biographer, and the duty could not have been assigned to a more able person than the present most respected Dean of Ely. I look forward, in common with all who reverence literature and science, and who are capable of enjoying the pleasures of knowledge and intellect, with great eagerness and anxiety for the appearance of the Rev. Dr. Peacock's work.

When M. Arago surveyed the catalogue of Dr. Young's productions, he exclaimed "Qui ne se fût imaginé, en effet, qu'on avait enregistré les travaux de plusieurs Academies, et non ceux d'une seule personne, en entendant, par exemple, cette serie de titres." To the Royal Society Dr. Young made many communications; sixteen of his papers have been printed in the Philosophical Transactions.

1. (1793, p. 169. *Observations on Vision.* The manner in which, by the power of volition in the mind the eye can accommodate itself to the perception of objects at different distances, is a subject that has constantly engaged the attention of physiologists and opticians. In this paper the author takes a review of the theories which have been offerred to explain this subject: those of Kepler, Descartes, De la Hire, Pemberton, Porterfield, Jurin, Musschenbroek, and others. He thought, however, that the explanation must be looked for in the structure of the crystalline lens, and upon examining this part in the eye of an ox, he discovered a peculiar arrangement of muscular fibres, which, in his opinion, served to remove all the difficulties with which this branch of optics had long been obscured and quite sufficient to produce an alteration in the form of the lens adequate to account for the known effects. Descartes he shows had suspected the lens to be muscular, but he accounted for the accommodating power of the eye by the elongation of the eye's axis. Leuwenhoek described its fibres, and

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even calls it the *crystalline muscle;* but he does not hint at the office of it, as explained by Young. Mr. E. Home in a paper read in the same year as that of Dr. Young, communicating some facts relative to Mr. John Hunter's preparation for the Croonian Lecture of that year, which, unfortunately for science he did not survive to deliver, claims for him the suggestion of the use of the lens and its power in regulating its own internal actions to adjust itself so as to adapt the eye to view objects at different distances. It appears that Mr. Hunter had remarked the fibrous structure in the lens of the cuttle-fish.

2. (1800, p. 106.) *Outlines of Experiments and Inquiries respecting Sound and Light.* These are arranged under sixteen different heads, and are offered only as the first steps of an investigation. In the fifteenth division a technical description is given of the formation of sounds by the configuration and inflexions of the vocal organ. The author intimates, that by a close attention to the harmonies entering into the constitution of various sounds, much more may be done in their analysis than could otherwise be expected.

3. (1801, p. 23.) *On the Mechanism of the Eye.* This is a Bakerian Lecture. It contains a variety of ingenious observations of a general nature pertaining to vision, treats particularly of the focal distances of the eye, and suggests an improved optometer. It also enters upon a minute consideration of the dimensions and refractive powers of the human eye in its quiescent state, and the form and magnitude of the picture which is delineated on the retina. The power of the lens in altering the focal length of the eye is further considered, and it is shown that in persons who have had the lens removed in the operation of Extraction of the Cataract, the actual focal distance is totally unchangeable.

4. (1802, p. 12.) *On the Theory of Light and Colours.* Another Bakerian Lecture. This paper developed the important law of *Interference* established by Dr. Young, which M. Arago regards as his chief discovery, and one that will render his name imperishable. Dr. Young in this paper says he thinks himself authorized to assert, without hesitation, that radiant light consits in undulations of the luminiferous æther. The increase or diminution of light, he thinks clearly referable to an increase or diminution of the undulations, and that all the affections to which the undulations would be liable, are distinctly visible in the phenomenon of light, and that it may therefore be very logically inferred that the undulations are light.

5. (1802, p. 387.) *An Account of some Cases of the Production of*

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Colours, not hitherto described. This may be regarded as a continuation of the preceding paper, exhibiting in a simple and concentrated form, some applications of the same law. These papers were virulently attacked (it is supposed by Mr. Henry Brougham) in the Edinburgh Review. Dr. Young printed a reply in 1804, in which he did not hesitate to assign as the cause of attack the possession and publication of particular opinions on the part of the Reviewer, which the establishment of those entertained by Dr. Young would infallibly destroy. The reply is exceedingly spirited, and exhibits a confidence which properly belongs to profound knowledge of the subject, and the possession of indisputable integrity of character.

6. (1804, p. 1.) *Experiments and Calculations relative to Physical Objects.* A Bakerian Lecture containing the demonstration and the application of the law of Interference.

7. (1805, p. 71.) *An Essay on the Cohesion of Fluids.* In this paper the phenomena of the capillary action of fluids are reduced to the general law of an equable tension of their surfaces. It contains many of the results which were published as new, about a year afterwards, by Laplace. The mathematical reasoning, for want of mathematical symbols, was not understood, even by tolerable mathematicians. From a dislike of the affectation of algebraical formality, which he had observed in some foreign authors, he was himself led into something like an affectation of simplicity, which was equally inconvenient to a scientific reader.

8. (1808, p. 164.) *Hydraulic Investigations, subservient to an intended Croonian Lecture on the Motion of the Blood.* The motion of fluids in pipes as affected by friction is here minutely investigated.

9. (1809, p. 1.) *On the Functions of the Heart and Arteries.* This is a Croonian Lecture, and the physiological application of the principles established in the preceding paper. The author attempts to demonstrate on mathematical principles, that the larger arteries can have little or no concern in propelling the blood by their active muscular powers.

10. (1809, p. 148.) *A Numerical Table of Elective Attractions; with remarks on the Sequences of double Decompositions.*

11. (1814, p. 303.) *Remarks on the Employment of Oblique Riders, and on other alterations in the construction of Ships.* This is the substance of a Report presented to the Board of Admiralty with additional demonstrations and illustrations.

12. (1818, p. 95.) *Remarks on some Theorems relating to the Pendulum.* In a letter to Capt. Kater.

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13. (1819, p. 70.) *Remarks on the Probabilities of Error in Physical Observations, and on the Density of the Earth, considered, especially with regard to the Reduction of Experiments on the Pendulum.*

14. (1824, p. 159.) *A finite and exact Expression for the Refraction of an Atmosphere nearly resembling that of the Earth.*

15. (1826, p. 281.) *A formula for expressing the Decrement of Human Life.* An important paper intended to render the interpolation from the best observations more regular: it is followed by a correction of Dr. Price's mistake, respecting the periodical payments of Annuities.

16. (1826, p. 481.) *Computations of the Sun's Longitude from the Observations, made at Greenwich in* 1820, *compared with Delambre's Tables, as corrected by Burckhardt and Bouvard, and with Carlini's, as modified by some slight corrections communicated by Professor Schumacher.*

To the Transactions of the Linnæan Society he furnished two papers: *A Description of an Opercularia,* (Vol. III. p. 30.) called by Persoon Cryptospermum Youngii from the name here suggested; and *a Translation of Lichtenstein on the Genus Mantis.* (*Vol.* VI, *p.* 1.) To the Archæologia he supplied two papers:

1. (Vol. XVIII. p. 59.) An appendix (anonymous) to Sir W. E. R. Boughton's Paper, entitled *Some Remarks on Egyptian Papyri and on the Inscription of Rosetta.* This is the first published paper relating to Dr. Young's extraordinary discovery in Egyptian literature to which I have before referred, and of which I have elsewhere given a full account. I beg to refer the reader to my *History of Mummies, &c.*, for a detail of the various steps by which it was attained, and for an account of the labours of subsequent antiquarians in this curious field of inquiry.

2. (Vol. XIX, p. 156.) *Specimen of a Greek MS. in the possession of the Earl of Mountnorris.*

In the Museum Criticism of Cambridge, there are two papers, by Dr. Young:

1. (Part VI. 1815.) *Extracts of Letters and Papers relating to the Egyptian Inscription at Rosetta.*

2. (Part VII.) *Additional Letters relating to the Inscription at Rosetta.*

In the Monthly Review for 1791, appeared his first printed paper: *A short note on Gum Ladanum, with a verbal Criticism on Longinus,* signed with his initials. The criticism was admitted by Dr. Burney to be correct.

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To the Classical Journal, No. 75, *A Letter to M. Arago, relating to M. Champollion's Discoveries.*

To the Gentleman's Magazine for 1792: *Observations on the Manufacture of Iron*: an attempt to remove some objections to Dr. Crawford's Theory of Heat. Also *Entomological Remarks on the Habits of Spiders; on a passage of Aristotle, with an Illustration of the Fabrician System; and a plate of the mouth of an Insect.*

To the British Critic: *A Review of Sinclair on Longevity.*

To the London Review, 1810: *Account of the Pharmacopœia Londinensis.*

In the Imperial Review, 1804, several articles: *Dumas Phisiologie—Darwin's Temple of Nature—Blackburn on Scarlet Fever—Percival's Medical Ethics—Fothergill on Tic Douloureux—Crichton's Table—Nisbet's Watering Places—Rowley on Madness—Hutton's Ozanum—Buchan on Sea Bathing—Robison's Astronomy—Winterbottom's Sierra Leone—Macgregor's Medical Sketches—Wilson's Philosophy of Physic—Richerand's Physiology—and Joyce's Scientific Dialogues.*

To the British Magazine, 1800: *The Leptologist:* a series of Essays on Grammar, Criticism, Geometry, Paintings, Manners, Riches, Exercises, Medicine, and Music. Also Account of the French Calendar and Measures, and an Essay on the Morals of the Germans.

To the Retrospect: *Abstracts and Criticisms.*

To the Philosophical Magazine: The Papers of *Berzelius on Definite Proportions*, from the German in various numbers, from Jan. 1813, to April 1814. *An Investigation of the Pressure sustained by the fixed supports of flexible substances.* Sept. 1813. *An Algebraical Expression of the Values of Lives,* Jan. 1816.

To Nicholson's Journal: *A Letter respecting Sound and Light.* Aug. 1801. *A Reply to Mr. Gough's Remarks* on the same. Nov. 1802. *Remarks on Looming, or Horizontal Refraction.* July 1807. *A Table of Chances, with Remarks on Waves.* Oct. 1807. *A Theory of Covered Ways and Arches.* Dec. 1807. *Remarks on a Pamphlet of Professor Vince;* pointing out the Mathematical fallacy of the Professor's supposed refutation of the Hypothesis of Newton respecting the Cause of Gravitation. April, 1808. *Calculation of the rate of expansion of a supposed Lunar Atmosphere.* Jun. 1808. *Determination of the Figure of a gravitating Body.* ib. *Calculation of the Attraction of a Spheroid.* Aug. 1808.

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Computation of the Depression of Mercury in the Barometer. March 1809. *Continuation of the Paper on the Cohesion of Fluids.* Oct. 1809. *A Memoria Technica for Elective Attractions, in a few Latin Hexameters.* April, 1809. *A Theory of the Tides.* July, Aug. 1813.

To the Royal Institution Journal, Dr. Young made numerous communications. The first volume and part of the second were edited, and chiefly written by him. He furnished also *Remarks on Laplace's latest computation of the Density and Figure of the Earth.* April, 1820. *Remarks on Spohn and Seyffarth, Oct.* 1826. *Practical application of the Doctrine of Chances as it regards the sub-division of Risks.* ib. *Remarks on M. Peyron's Account of the Egyptian Papyrus.* Jan. 1827. *Hieroglyphical Fragments.* April, June, July, Sept., Oct., Dec., 1827: and Jan. and March, 1828. *Comparison of Different Tables of Mortality.* Dec. 1828. *Letter to Mr. Bailey.* April, 1829. *A Translation of Fresnel's Elementary View of the Undulating Theory of Light.* From Jan. 1827, to April 1829.

To the Quarterly Review, the Articles; (Vol. I.) *Laplace—Action—Capillaire*—(Vol. II.) *Haslam, Pinel, Cox and Arnold on Insanity—Laplace, Refraction Extraordinaire*—(Vol. III.) *Herculanensia—Jones on the Gout—Memoires d' Arcueil*—(Vol. VI.) *Cuthbert on the Tides*—(Vol. VII.) *Davy's Chemical Philosophy*—(Vol. IX.) *Blackall on Dropsies*—(Vol. X.) *Adelung's Mithridates—Göethe on Colours*—(Vol. XI.) *Malus, Biot, Seebeck, and Brewster, on Light—Bancroft on Dying—Davy's Agricultural Chemistry—Adams on Ectropium*—(Vol. XIII.) *Wells on Dew*—(Vol. XIV.) *Jamieson and Townsend on Languages—Pym and Fellowes on Yellow Fever, (an article printed but not published in the work)*—(Vol. XIX.) *Restoration and Translation of the Inscription on the Sphynx.*

The Nautical Almanack was edited by Dr, Young from 1819, for the remainder of his life, and he furnished quarterly, for many years, to the Royal Institution Journal about twenty pages of Astronomical and Nautical Calculations beginning in 1820; the greater part either original or translated by himself.

To the Encyclopædia Britannica, he supplied numerous articles: *Atwood—Addendum to Annuities—Bathing—Beccaria—Bloch—Borda—Bramah—Bridge—Brisson—Bryant—Camus—Notes on Carpentry—Cavallo—Cavendish—Chromatics—Cohesion—Condamine—Coulamb—Dollond—Do-*

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lomieu—Duhamel—Egypt—Fermat—Fluents—F. Fontana—G. Fontana —J. R. Forster—J. G. A. Forster—Fourcroy—Frisi—Guyton de Morveau —Herculaneum — Hydraulics —Ingenhousz —Lagrange —Lalande—Lambert—Languages—Lemmonier—Luc—Malus — Maskelyne—Mason—Mechain—Messier—Orme—Pallas—Pauw—Porson—Preservers of Life—Road making—Robison—Rumford—Rush—Steam Engine – Tennant—Thomson —Tides—Tooke—Wakefield—Watson—Weights and Measures—Polarization by Arago, translated with notes.

In addition to these numerous labours, Dr. Young assisted several authors. He contributed to Hodgkin's Calligraphia Græca Lond. 1794, 4to; including Lear's Curses in Iambics—Some Notes and an Epigram in Dalzel's Collectanea Græca—Remarks on the Friction of Wheels in Buchanan's Essay on Wheel Work—An Investigation of the Thrust of soft substances in Hutton's Mathematical Dictionary, article Pressure—Account of some Thebaic MSS. in Legh's Narrative—Translation of some Greek Inscriptions in Light's Travels—Appendix to Belzoni's Travels, 2nd. ed. 1821.

His own distinct publications may be said to consist of 1. his Thesis, 2. a Syllabus of Lectures at the Royal Institution, 3. Lectures on Natural Philosophy, 4. Syllabus of Lectures on Medicine, 5. Introduction to Medical Literature, and 6. Treatise on Consumptive Diseases already noticed. To these must be added, 1. Letters of Canova, and two Memoirs of Visconti translated from the French and Italian, Lond. 1816, 8vo. This forms a volume of 200 pages, and was completed in 12 days, together with remarks on an error of Delambre. 2. Elementary Illustrations of the Méchanique Céleste of Laplace, Lond. 1821, 8vo.. with some additions relating to the motions of Waves, and of Sound, and to the Cohesion of Fluids. It is said that Dr. Young considered this volume, and his paper on the Tides, in the Encyclopædia Britannica, the most fortunate of the results of his mathematical labours. 3. An Account of some Recent Discoveries in Hieroglyphical Literature and Egyptian Antiquities, including the author's original Alphabet, as extended by M. Champollion, 1823, 8vo.; with a Translation of some Greek MSS. on Papyrus, the most remarkable of which was Mr. Grey's Antigraph of an Egyptian original, then lying on his table, the discovery of which singular coincidence was the immediate cause of the publication of the volume. 4. Hieroglyphics, collected by the Egyptian Society, Lond. 1823, folio. The expense of this work was defrayed by a certain number of subscribers, Dr. Young performing the whole of the literary part. It was transferred to the Royal Society of Literature, by whom it has been continued by various hands. 5.

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Rudiments of an Egyptian Dictionary in the Ancient Enchorial Character, Lond. 1831, 8vo. This was published after the death of the author, and has prefixed to it a Memoir of Dr. Young, by Hudson Gurney, Esq. It was under the hands of the Lithographer at the time of his decease.

From the foregoing account of Dr. Young, and enumeration of his labours, it will be apparent that scarcely a subject either in literature or science escaped his attention. He studied everything—his application was incessant—no object could present itself to his notice, but as a subject of meditation and research. It is singular, but at the same time very characteristic of him, that when at Edinburgh taking lessons in dancing, he was found to have reduced the various courses and positions of the dancers in a minuet to a mathematical diagram! With all his knowledge, Young was a man not shut up in his cabinet or immured in his library—he entered into society, he associated with the most distinguished persons of his day, philosophers, poets, physicians, divines, nobility, gentry, &c. His manners were elegant, though somewhat precise. He had much taste for the arts, and he was well versed in the science of music, and took great delight in hearing it. In Germany he took lessons in horsemanship, and in that, as in all other things, he showed great activity. He could vault, leap, and perform many feats which required very astonishing agility. No difficulty ever daunted him and he would not allow any thing to conquer his determination. His moral qualities were of a high order. He was distinguished by a love of truth, "the sovereign good of human nature," from which in no sense whatever would he ever admit of a departure. His powers of imagination were therefore subjected to severe controul.

M. Arago holds Young to be one of our most illustrious English Philosophers. Young (he says in an Eloge read to the Royal Institute of France Nov. 26, 1832,) est maintenant à vos yeux l'un des savants les plus illustres dont l'Angleterre puisse s'enorguellir." And the same authority remarks with astonishment that his death should have caused so little sensation (retentissement) in his own country. This did not arise from an insufficiency of persons competent to estimate the value of his researches; and posterity will do him justice. Perhaps one reason for this apparent neglect is to be found in the object and style of his writings. In his mathematical, as well as in his medical researches, he has presumed upon his readers being more acquainted with science than is really the case, and he was fond of exercising his talents upon subjects the most difficult of developement and comprehension. As a mathematician, it has been observed, that Dr. Young "was of an elder school, and was possibly somewhat prejudiced against the system now obtaining, both amongst the continental and the English philosophers;

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as he thought the powers of intellect exercised by a preceding race of mathematicians, were in no small danger of being lost or weakened by the substitution of processes in their nature mechanical." He may fairly be looked upon as a man of bold and inventive genius—his discovery of the principle of *Interferences* leads to the explanation of some of the most interesting phenomena in optical and acoustic science. The analogies between sound and light traced out by Dr. Young must be considered as most felicitous. His Theory of the Tides manifests great ingenuity and displays great mathematical powers, though some modern and distinguished philosophers are not disposed to admit the subject to be yet satisfactorily explained. The application of his Hydraulic Investigations to the physiology of the Heart and Arteries as exhibited in the Croonian Lecture, in my opinion, constitute one of Young's happiest demonstrations. It has been asserted that men of genius are rarely capable of application. Dr. Young offers an exception to this opinion, which is probably true only in cases where violence is offered to their genius by throwing them into a line of life which does not afford scope for the exercise of it. Of Dr. Young, it may be truly said, that there is no branch of science or literature with which he was not familiar, nor any in which he has failed to add to the stock of knowledge before possessed upon them, and that altogether he must be regarded as one of the most highly gifted and enlightened men the age has produced.

The portrait which accompanies this Memoir is taken from a painting by Sir Thos. Lawrence, in the possession of Hudson Gurney, Esq., to whose liberality I am indebted for the use of it; and the autograph is from Dr. Young's signature in the statute book of the Royal Society.

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